PB81-177644

Wastewater Treatment Facilities for the City of Post Falls, Idaho

(U.S.) Environmental Protection Agency
Seattle, WA

Mar 81

U.S. Department of Commerce
National Technical Information Service
NTIS

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA 910/9-81-030	2.	3. RECIPIENT'S ACCESSION NO. PB81 177644
4. TITLE AND SUBTITLE WASTEWATER TREATMENT FACILITIES FOR THE CITY OF POST FALLS, IDAHO. DRAFT ENVIRONMENTAL IMPACT STATEMENT.		5. REPORT DATE March 1981 6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Jones & Stokes Associates, Inc. 2321 P Street Sacramento, CA 95816		10. PROGRAM ELEMENT NO. 11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS U.S. Environmental Protection Agency Region X 1200 Sixth Avenue Seattle, WA 98101		13. TYPE OF REPORT AND PERIOD COVERED DRAFT EIS 14. SPONSORING AGENCY CODE
15. SUPPLEMENTARY NOTES		

16. ABSTRACT

The city of Post Falls, Idaho has applied to the U.S. Environmental Protection Agency (EPA) for funds to develop a facilities plan for the construction of a central wastewater collection, treatment and disposal system to serve city residents and residents of adjacent urbanizing unicorporated areas. The largest city in Idaho without a central wastewater collection and treatment system, Post Falls is a community of approximately 5650 residents. The wastewater treatment system is needed to terminate the use of individual on-site wastewater disposal systems which are suspected of contaminating the Rathdrum Prairie aquifer. This aquifer serves as a drinking water supply for 338,000 people in the Spokane River basin. Construction of a wastewater treatment system for Post Falls will comply with aquifer protection policies and allow for additional residential and commercial development in the area. EPA has prepared this draft environmental impact statement to evaluate the consequences of the proposed wastewater treatment facility.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Sewage Treatment Community Development Environmental Impact Statement Idaho	Post Falls, Idaho	

18. DISTRIBUTION STATEMENT Unlimited distribution	19. SECURITY CLASS *(This Report)* unclassified	21. NO. OF PAGES 191 pages
	20. SECURITY CLASS *(This page)* unclassified	22. PRICE

EPA Form 2220-1 (9-73)

910/9-81-080

United States
Environmental Protection
Agency

Region 10
1200 Sixth Ave.
Seattle, WA 98101

PB81-177644

March 1981

Water

EPA-10-ID-Post Falls-Kootenay-WWTW

EPA

Draft Environmental Impact Statement

Wastewater Treatment Facilities for the City of Post Falls, Idaho

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA 22161

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

March 6, 1981

REPLY TO ATTN OF: M/S 443

TO ALL INTERESTED AGENCIES, PUBLIC GROUPS AND CITIZENS:

We are forwarding for your review and comment this Draft Environmental Impact Statement (DEIS) for wastewater treatment facilities for the City of Post Falls, Idaho.

The Environmental Protection Agency (EPA) is preparing this EIS pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 and implementing Agency regulations. We present this EIS as an informational document on the potential impacts of construction of wastewater treatment facilities for Post Falls. Discussions of alternative solutions that have been considered during the planning process are included, as well as measures that may be taken to minimize the environmental impacts.

Availability of the EIS will be announced in the Federal Register on Friday, March 6, 1981, beginning a 45-day review period. If you have any comments on this draft EIS or wish to provide additional information for inclusion in the final EIS, we would appreciate hearing from you before the close of the comment period on April 20, 1981. All comments received will be given consideration in evaluating the alternatives before EPA's decision is made on the proposed project. Comments or questions concerning this Draft EIS should be submitted to the attention of Ms. Norma Young (M/S 443) at the above address. Copies of the EIS are available for review at the Post Falls library.

A public hearing will be held to discuss the Draft EIS at 7:30 p.m. on April 6, 1981 in the Multipurpose Room of Frederick Post Elementary School, 201 W. Mullan Avenue in Post Falls. We invite you to attend the hearing. All are welcome and will have an opportunity to be heard.

COLOR ILLUSTRATIONS REPRODUCED
IN BLACK AND WHITE

Draft
Environmental Impact Statement

City of Post Falls
Wastewater Facilities Plan

Prepared by:

U. S. Environmental Protection Agency
Region 10
Seattle, Washington 98101

With technical assistance from:

Jones & Stokes Associates, Inc.
2321 P Street
Sacramento, California 95816

In association with:

Culp-Wesner-Culp
University of Idaho, Laboratory of Anthropology

Responsible Official:

Donald P. Dubois
Regional Administrator

January 21, 1981
Date

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY 1

- Purpose and Need for Action 1
- Background 2
- Project Alternatives 2
  - No-Action Alternative 2
  - Wastewater System Alternatives 4
  - Other Alternatives Considered 7
  - Alternatives Available to EPA 7
- Project Phasing and Proposed City Action 8
  - Initial Phasing Proposal 8
  - Revised Phasing and Proposed City Action 8
  - Project Size and Phasing Considered in EIS 9
- Impacts and Mitigation Measures 9
  - Full Project Alternatives 9
  - Recent First Phase Proposal 10
- Summary Comparison of Alternatives 20
- Coordination 21

CHAPTER 1 - EXISTING AND PROPOSED WASTEWATER FACILITIES 23

- Introduction 23
- Collection System Alternatives 24
- Treatment Plant Site Alternatives 26
- River Discharge Location Alternatives 29
- Land Application Site Alternatives 29
- Total Wastewater System Alternatives 31
  - No-Action Alternative 31
  - Alternative A - Mechanical Biological Treatment with Seasonal Land and River Discharge 31
  - Alternative B - Mechanical Biological Treatment and Continuous River Discharge 33
  - Alternative C - Aerated Lagoon Treatment with Seasonal Land and River Discharge 35
- Wastewater Management Alternatives Considered and Deleted 35
- Project Phasing and Proposed City Action 37

CHAPTER 2 - ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES 39

- Introduction 39
- Construction Disruptions of Significance 39
  - Treatment Plant Construction 39
  - Spray Disposal Area Construction 41
  - Pipeline Construction 42
  - Outfall Construction 44
  - Mitigation Measures 44

Page
Surface Water Quality Implications 44
    Existing Water Quality 44
    Impact of Proposed Waste Treatment Facility on Existing Water Quality 45
    Impact of Proposed First Phase Project 56
Impact of Water Quality Changes on Existing Fishery 57
    Heavy Metals 58
    Ammonia 58
    Chlorine 59
    Biochemical Oxygen Demand (BOD) 59
    Summary and Conclusions 60
Impact on Uses of the Spokane River 60
    Introduction 60
    Water Contact Recreation 60
    On-Water Recreation 63
    Shoreline Activities 64
    Economic Uses 64
    Agricultural Uses 65
    Groundwater Recharge 65
    Impact of Proposed Project Phasing 65
    Summary and Conclusions 66
Potential for Public Health Threats in Surface Waters 66
Impact on the Rathdrum Prairie Aquifer Water Supply 70
    Character of the Aquifer 70
    Present Health Threat 72
    Resultant Regulatory Controls 74
    "No-Action" Situation 75
    Impact of Wastewater Facilities Alternatives 76
    Risk Analysis 81
    Mitigation of Potential Groundwater Quality Impacts 85
Public Health Risks on and Around the Spray Disposal Area 87
Influence on Soils and Crops 88
Land Use Conflicts 89
    Introduction 89
    Land Use Characteristics of Proposed Sites 91
    Potential Land Use Conflicts 96
Energy Consumption 100
Project Costs 102
    Total Cost Comparison of Alternatives 102
    Cost to Wastewater System Users 105
Growth Implications 107
    Introduction 107
    Analysis of Facilities Plan Population Projections 107
    Growth-Inducing Implications of Post Falls Wastewater Facilities 112
    Future Land Use 113
    Air Quality 118
    Water Quality 120
    Scarce Resources 123
    Archeological and Historic Resources 125
    Impacts of Growth on Public Services 126
    Fiscal Implications 128

Page

CHAPTER 3 - COORDINATION 133

Introduction 133
Agency and Public Participation to Date 133
Suggestions and Objections Received Through Coordination 134
Alternatives Coverage 134
Issues Coverage 135
Continuing Coordination Efforts 136

LIST OF REPORT PREPARERS 137

ACRONYMS AND ABBREVIATIONS 141

BIBLIOGRAPHY 143

References Cited 143
Personal Communications 146

APPENDICES

A - Historic and Archeological Resources Reports, University of Idaho Laboratory of Anthropology, and Attendant Correspondence 149

B - Water Quality Standards, Guidelines and Regulations 165

C - Coordination Record 173

LIST OF TABLES

Table Page

1 No-Action Impacts and Mitigations 11

2 Impacts Common to the Three Action Alternatives (A, B, and C) 12

3 Alternative A Impacts and Mitigations 14

4 Alternative B Impacts and Mitigations 16

5 Alternative C Impacts and Mitigations 18

1-1 Characteristics of Potential Treatment Plant Sites 28

1-2 Characteristics of Potential Land Application Sites 30

2-1 Selected Water Quality Parameters for the Spokane River near Post Falls, Idaho 46

2-2 Estimated Quality of Post Falls Wastewater Effluent Discharged to the Spokane River 47

2-3 Potential Concentration Increases under Mean Flow Conditions of Selected Water Quality Parameters in the Spokane River near Post Falls, Idaho 48

2-4 Potential Concentration Increases under Q_{7-15} Flow Conditions of Selected Water Quality Parameters in the Spokane River near Post Falls, Idaho 49

2-5 Potential Load Increases under Mean Flow Conditions of Selected Water Quality Parameters in the Spokane River near Post Falls, Idaho 50

2-6 Potential Load Increases under Q_{7-15} Flow Conditions of Selected Water Quality Parameters in the Spokane River near Post Falls, Idaho 51

2-6a Fecal Coliform Levels Measured in the Spokane River below Post Falls Dam 68

2-7 Nitrate Levels for Selected Areas within Rathdrum Aquifer 73

2-8 Estimated Post Falls Effluent Quality 90

2-9 Land Use Characteristics and Zoning Classification of Proposed Treatment Plant Sites 92

2-10 Land Use Characteristics and Zoning Classification of Proposed Land Application Sites 94

2-11 Land Requirements of Alternatives 95

Table		Page
2-12	Potential Impact of Alternative Treatment Plant and Land Application Sites on Human Environment	98
2-13	Potential Mitigation Measures	99
2-14	Alternative Project Energy Requirements	100
2-15	Alternative Plan Cost Summary	103
2-16	Alternative Plan Equivalent Annual Costs	104
2-17	Alternative Population Projections for Kootenai County and the City of Post Falls	108
2-18	Comparison of Average Annual Growth Rates	111
2-19	Estimates of Added Urban Acres: Post Falls Facilities Plan Population Projections	116
2-20	Summary of Total Suspended Particulate Measurements in the Post Falls Area, 1970-1979	121
2-21	Areal Runoff Loading Rates Selected for Spokane	124
2-22	Kootenai County, Idaho Property Tax Revenue Requirement by Service Category	130

LIST OF FIGURES

Figure		Page
1	Location of Post Falls Facilities Planning Area	3
2	Post Falls Facilities Planning Area and Phase I and II Service Areas	5
3	Schematic Diagram of the Three Post Falls Facilities Plan Alternatives	6
1-1	Proposed Post Falls Collector System	25
1-2	Post Falls Proposed Treatment Plant Site and Disposal Area Alternatives	27
1-3	Flow Schematic - Alternative A	32
1-4	Flow Schematic - Alternative B	34
1-5	Flow Schematic - Alternative C	36
2-1	Relationship Between Spokane River Beneficial Uses and Average Available Dilution of Wastewater Discharges to the River	61
2-2	Sole Source Area for the Spokane Valley-Rathdrum Prairie Aquifer	71
2-3	Prime Agricultural Land in the Facilities Planning Area	119

EXECUTIVE SUMMARY

(X) Draft Environmental Impact Statement

( ) Final Environmental Impact Statement

Type of Action: Administrative

Purpose and Need for Action

The City of Post Falls, Idaho has applied to the U. S. Environmental Protection Agency (EPA)* for funds to develop a facilities plan for the construction of a central wastewater collection, treatment and disposal system to serve city residents and residents of adjacent urbanizing unincorporated areas. EPA has awarded Step I planning funds to the city under Section 201 of the Clean Water Act. The wastewater treatment system is needed to terminate the use of individual on-site waste disposal systems which are suspected of contaminating the Rathdrum Prairie aquifer. The Rathdrum Prairie aquifer is of high quality and serves as a drinking water supply for 338,000 people in the Spokane River basin. Because of its extreme value as a drinking water source, EPA designated the aquifer a "sole source" aquifer under the federal Safe Drinking Water Act in 1978. The Idaho Panhandle Health District (PHD) has been given responsibility for protection of the aquifer. Construction of a central wastewater treatment system for Post Falls will comply with the aquifer protection policies of the PHD and will allow additional residential and commercial development in the area.

Before additional funds for design and construction of a selected project can be awarded to the City of Post Falls, EPA must complete an environmental review of potential impacts of the project. This review must meet the requirements of the National Environmental Policy Act. In addition, the Safe Drinking Water Act requires that federal agencies ensure that any action taken does not lead directly or indirectly to contamination that would create a significant health hazard in a "sole source" aquifer. To comply with these requirements, EPA has prepared this Environmental Impact Statement (EIS) to evaluate the consequences of the construction of the proposed wastewater treatment facility. The EIS has been distributed to interested citizens, public groups and government agencies for review and comment. All comments received will be given consideration before EPA makes a decision on providing funding to the City of Post Falls for design and construction of a wastewater treatment system.

---

*A list of acronyms and abbreviations is included in page 141.

Background

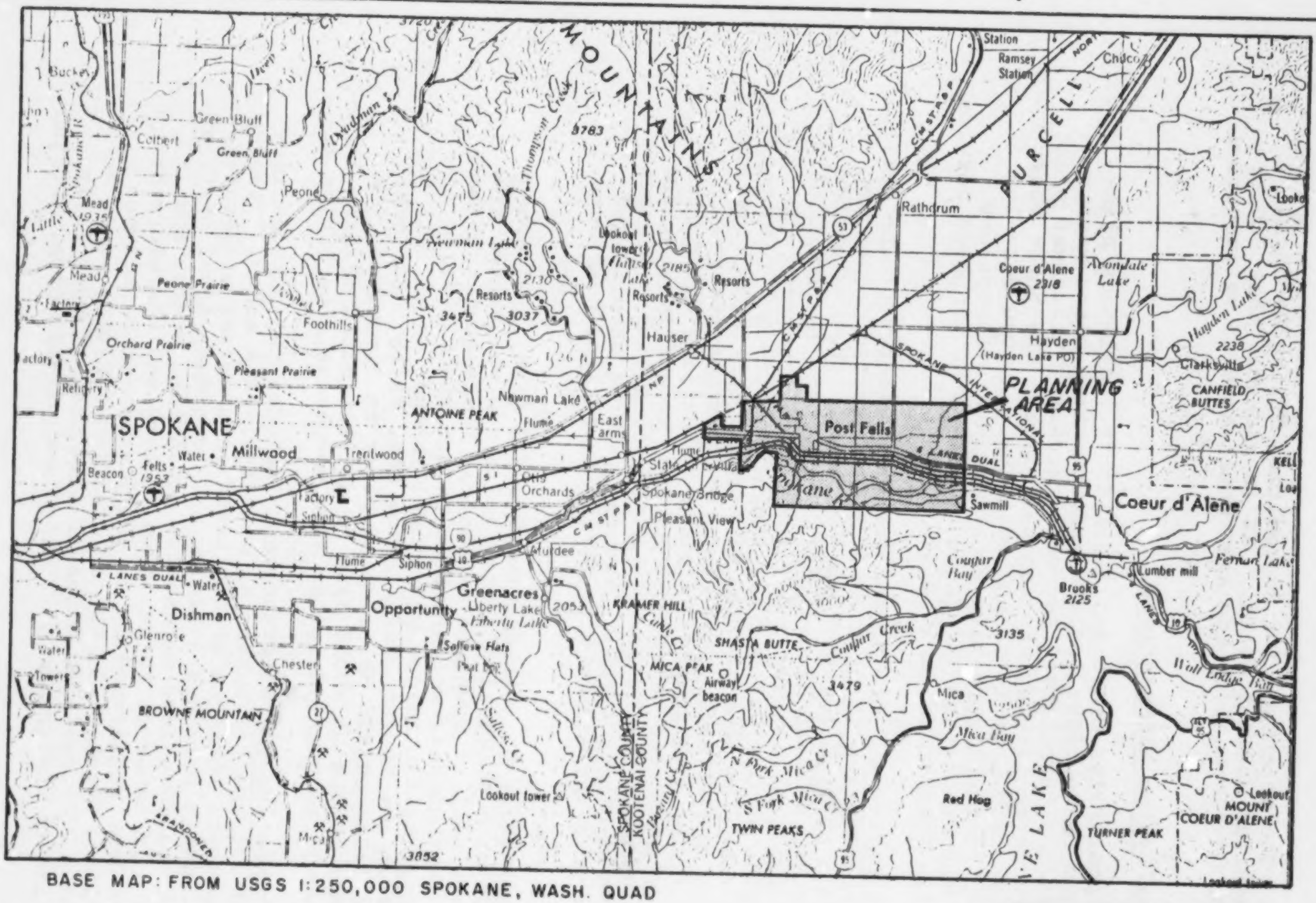
The City of Post Falls is a community of approximately 5,650 residents and is the largest city in Idaho without a central wastewater collection and treatment system. The city is located in Kootenai County in the Idaho Panhandle, 6 miles west of the City of Coeur d'Alene, Idaho and 20 miles east of Spokane, Washington on the Spokane River (Figure 1). Beneath it lies a large underground body of fresh water known as the Spokane Valley-Rathdrum Prairie aquifer (referred to in this EIS as the Rathdrum Prairie aquifer). The aquifer flows through very coarse material from northern Idaho, eventually surfacing as springs and surface flow near the junction of the Spokane and Little Spokane Rivers, 6 miles northwest of Spokane, Washington. The aquifer is a primary source of drinking water for a large number of area residents.

Like much of northern Idaho, Post Falls has grown rapidly in population in the past 5-10 years. Population has increased from less than 2,400 people in 1970 to approximately 4,850 in 1978. The 1980 census shows this number has increased to 5,650. Residences, commercial establishments and industry use individual on-site waste disposal methods, including septic tanks with leach fields, drywells and cesspools. Not only has the city's rapid growth caused problems in providing public services, it has generated groundwater quality concerns. The density of urban development and the city's location over the Rathdrum Prairie aquifer are potentials for contamination of the aquifer, which would be a significant health hazard to residents of the area.

Project Alternatives

No-Action Alternative

After facilities planning for wastewater treatment for Post Falls is completed, if a decision is made not to construct a central wastewater collection, treatment and disposal system, residents would continue to use on-site disposal methods. No-action would be taken to provide centralized treatment and no local, state or federal funds would be allocated to



BASE MAP: FROM USGS 1:250,000 SPOKANE, WASH. QUAD

Reproduced from best available copy.

FIGURE 1. LOCATION OF POST FALLS FACILITIES PLANNING AREA

the city. The potential for degradation of the Rathdrum Prairie aquifer would continue. It is probable that future growth and development of the area would have to be curtailed.

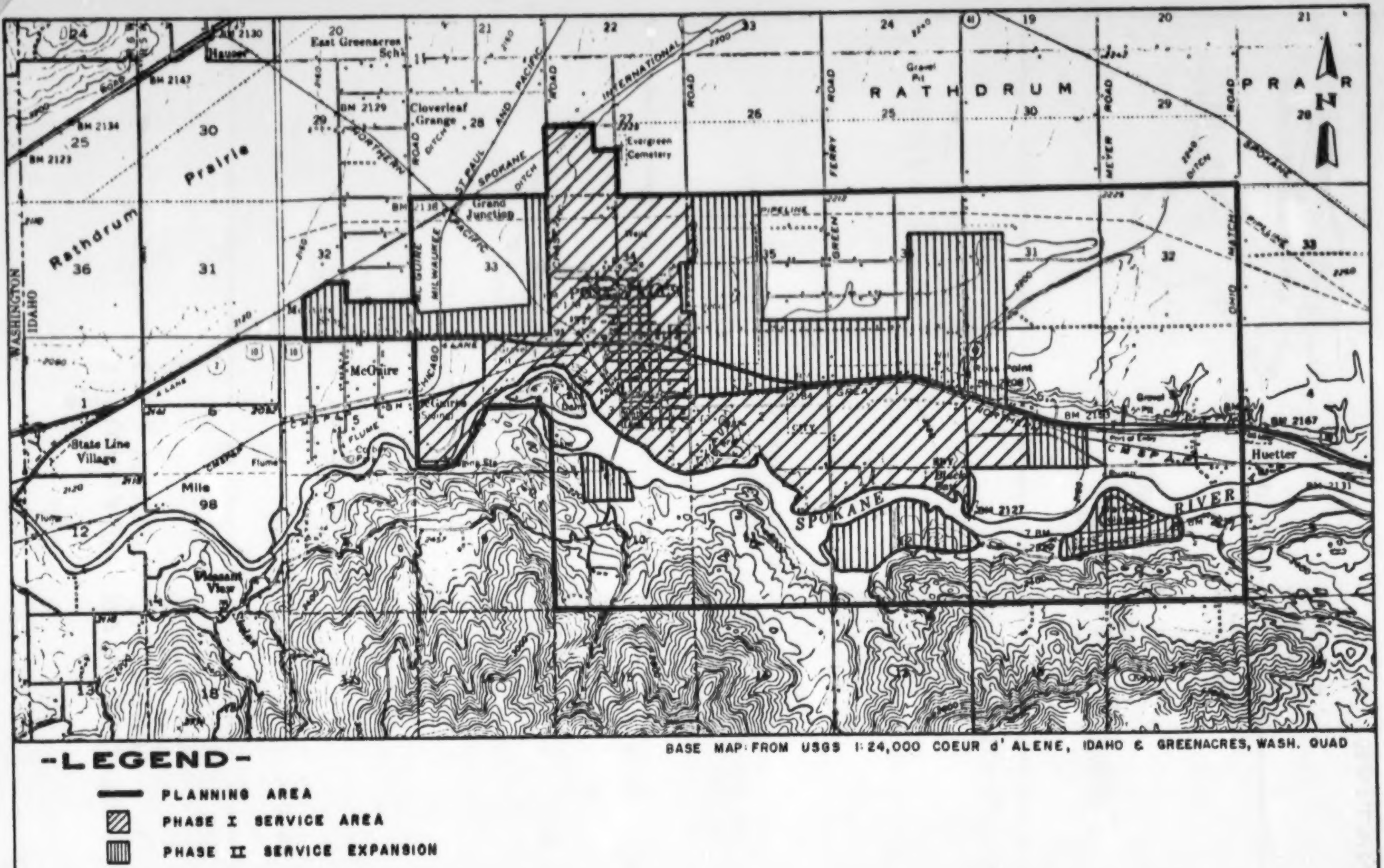
Wastewater System Alternatives

The post Falls draft and final draft facilities plans (LePard and Frame 1980; 1980a) describe three basic wastewater system alternatives, several wastewater treatment plant sites, and three irrigation disposal sites. The three basic alternatives are briefly described below. A more detailed discussion of the alternative treatment and site options can be found in Chapter 1. Figure 2 shows the proposed service area of the Post Falls facilities.

Alternative A. All Post Falls wastewater would be collected and transported through a newly-constructed collection system to a central location west of town. The wastewater would receive mechanical biological treatment (extended aeration process), filtration and chlorination. Between approximately April 15 and October 15, the effluent would be pumped to a 400-acre land application site for sprinkler irrigation of a grass and alfalfa crop. The remainder of the year, effluent would be discharged through an outfall and diffuser to the Spokane River below Post Falls. The effluent would be dechlorinated during low river flow conditions (Figure 3). Sludge would be aerobically digested, stored on-site and disposed of by injection into agricultural land near Post Falls.

Alternative B. Alternative B would also involve construction of a collection system and a new wastewater treatment plant west of town. A mechanical biological treatment process (extended aeration) would be utilized, and the effluent would be discharged year-round through an outfall and diffuser in the Spokane River below Post Falls. Effluent would be filtered and chlorinated prior to discharge. In the summer months it would also be dechlorinated (Figure 3). Sludge would be handled in the same manner as Alternative A.

Alternative C. Alternative C includes the same collection and interceptor system as Alternatives A and B. Treatment, however, would be accomplished in a series of aerated lagoons. This provides a biological secondary level of treatment but utilizes less mechanical equipment, energy and chemicals in favor of large, open lagoons and therefore has a larger land requirement. As in Alternative A, between April 15 and October 15, the chlorinated effluent would be piped to a 380-acre land disposal site west of Post Falls for sprinkler irrigation of a grass and alfalfa crop. During



BASE MAP: FROM USGS 1:24,000 COEUR d'ALENE, IDAHO & GREENACRES, WASH. QUAD

FIGURE 2. POST FALLS FACILITIES PLANNING AREA AND PHASE I AND II SERVICE AREAS

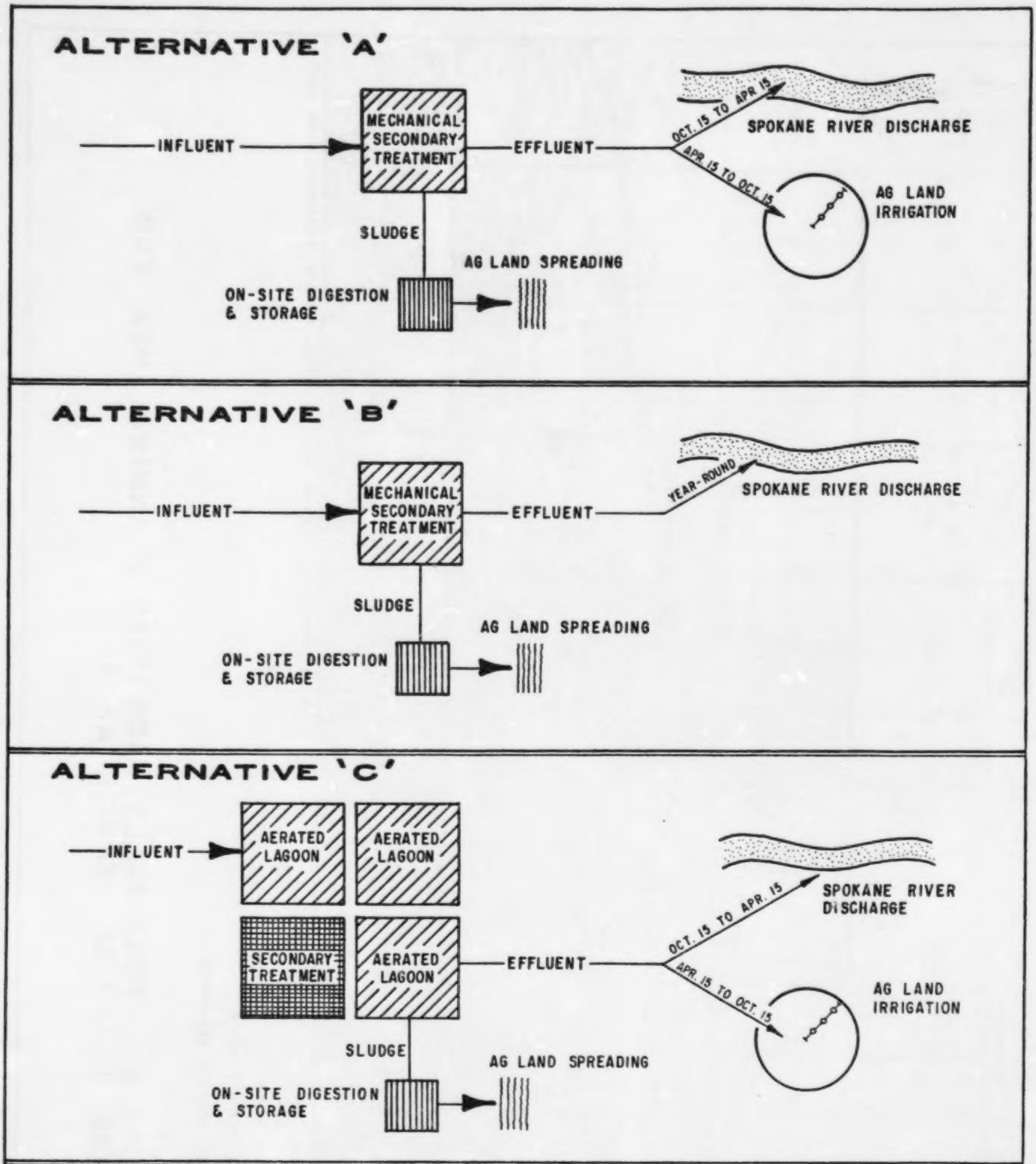


FIGURE 3. SCHEMATIC DIAGRAM OF THE THREE POST FALLS FACILITIES PLAN ALTERNATIVES

the remainder of the year, the effluent would be filtered, chlorinated and discharged to the Spokane River (Figure 3). The filtering would be accomplished by flotation/filtration rather than high rate filters as in Alternatives A and B. Sludge disposal would occur as described for Alternatives A and B.

Other Alternatives Considered

A number of other project alternatives were considered in the early stages of facilities planning but were rejected for various economic, institutional or engineering feasibility reasons. These alternatives included: 1) transport of Post Falls untreated wastewater westward to the Liberty Lake treatment plant in Washington for treatment and disposal, and 2) transport of the City of Coeur d'Alene's effluent to a joint Post Falls-Coeur d'Alene treatment and disposal system west of Post Falls.

The Liberty Lake option was dropped by the facilities planners due to its expected high cost and because the Post Falls flows would require the Liberty Lake treatment plant capacity to exceed 1 million gallons per day (MGD). This would require the plant to include treatment for phosphorus removal, increasing its cost considerably.

The regionalization option with Coeur d'Alene was studied because of the proximity of the two cities, the similarity of their water quality problems, and the similar timing of the Post Falls and Coeur d'Alene facilities planning efforts. After the regional wastewater scheme was given an initial feasibility analysis by the Post Falls and Coeur d'Alene facilities planners, the alternative was dropped. The engineers predicted extremely high project costs and problems coordinating the planning efforts of the two cities.

Alternatives Available to EPA

EPA's principal roles in this project are to provide an environmental review and to administer design and construction funds available through Section 201 of the Clean Water Act. EPA has a number of options available in acting on the grant applicant's (Post Falls) request for federal funding of the wastewater project. In terms of the structural configuration of treatment and disposal processes, EPA could offer funds for a combination of processes not currently included in a single alternative in the facilities plan. Although this is unlikely, it could be done for environmental or economic reasons. In terms of administrative actions, after review of the facilities plan and the environmental impacts of construction of the proposed project, EPA could: 1) fund the project as described and recommended by the city, 2) not fund the project, 3) provide funding at a level below that requested by the city, 4) provide funding in excess of the level requested by the city, 5) fund the project in stages, or 6) fund the project only after attaching certain conditions to the grant award. These administrative actions would be in response to regulatory requirements, funding availability, environmental concerns or some combination of all three.

If EPA determines that the project selected by the City of Post Falls would result in unacceptable adverse environmental impacts or excessive costs, it may wish to remedy these problems by placing conditions on the award of subsequent grants rather than supporting a different alternative or modifying the funding itself. EPA administrative procedures allow this mitigation approach to be used; it places the burden of action on the grant applicant rather than the funding agency. Grant conditions can include specific monitoring requirements, requests for supporting ordinances, or a variety of other controls on the construction and operation of the wastewater treatment and disposal facilities.

Project Phasing and Proposed City Action

Initial Phasing Proposal

The first draft of the Post Falls facilities plan (LePard and Frame 1980) proposed constructing wastewater facilities in several phases. The first phase would supply a collection system, treatment plant and disposal mode for 1.2 MGD of flow. This would accommodate a population of 1[illegible],600 and would meet demands through 1987. Additional facilities would be added in 5-year increments, with a year 2002 capacity of 2.4 MGD and a design population of 26,840.

Revised Phasing and Proposed City Action

Since issuance of the first draft of the facilities plan, the facilities planners have adjusted the proposed phasing because it appears state grant money and loans needed to finance treatment facilities and the collection system will not be available in the amounts originally expected. Also, the state and EPA are not willing to fund facilities for the large population increases predicted in the first draft of the facilities plan. The state has indicated that grant funds will be available for a treatment plant of 1.5 MGD capacity rather than the 2.4 MGD described in the facilities plan.

As a result, LePard and Frame has revised the scope of the Phase I project and modified its recommended project. Some of these changes are included in the final draft of the facilities plan (LePard and Frame 1980a). The current recommended plan is to construct a 1 MGD extended aeration treatment plant at Site T-5. A scaled-down first phase collection system would also be constructed, and an interim outfall would discharge secondary treated effluent to the river year-round just below Post Falls Dam. Treatment for phosphorus removal would not be included. The collection and treatment facilities would be expanded as funds became available. This approach was approved by the Post Falls City Council and facilities plan steering committee on October 10, 1980. LePard and Frame states that the summer land application scheme of Alternative A will eventually be implemented if meeting the state waste discharge requirements for disposal over the aquifer do not make Alternative A economically infeasible.

Project Size and Phasing Considered in the EIS

This EIS was written based on population and wastewater flow information provided by the facilities planners over the last year. The preliminary EIS population analysis indicated the facilities plan projects were in excess of those likely to be acceptable to the state, but this issue was not clarified until recently by the Idaho Department of Health and Welfare (IDHW). Therefore, the EIS analysis is based on phased construction of a 2.4 MGD treatment plant with its accompanying high population estimates. This does not suggest that EPA accepts these flow and population levels as appropriate. Funding will be available only for the population level acceptable to the state, which is a 20-year design project of 16,000 persons or approximately 1.5 MGD capacity. The EIS was not revised to reflect acceptable population levels (except for the cost sections) in order to avoid further delay in publishing the Draft EIS. The impacts of a reduced population growth and a smaller wastewater treatment plant in Post Falls would be less than those stated in this EIS.

Impacts and Mitigation Measures

Full Project Alternatives

The environmental impacts and potential mitigation measures for each project alternative are summarized in the following tables. Only the more significant impacts have been summarized. The first table lists the impacts of no-action and the second table lists impacts common to each of the action project alternatives (Alternatives A, B, and C). Separate tables follow with impacts specific to individual alternatives. Following the tables is a short narrative describing Phase I impacts; this is followed by a comparison of project alternatives.

The mitigation measures listed are possible methods of avoiding or reducing the severity of adverse impacts. Mitigations are not necessarily those that will be implemented should a project be constructed. The adopted mitigation measures will be included in EPA's Record of Decision on the project, which will be prepared after completion of the Final EIS. EPA will not be responsible for all mitigations required. Local, regional, and state agencies will be called upon to initiate those mitigations that are within their respective functional capacities.

Recent First Phase Proposal

As mentioned earlier, the City of Post Falls has recently proposed a scaled-down first phase project in response to funding limitations. This first phase is a departure from the full project alternatives described and analyzed on the following pages. Ultimately, it is expected that one of the three projects will be fully implemented, but in the interim Post Falls proposes construction and operation of a 1 MGD mechanical secondary treatment plant with year-round disposal to the river just below Post Falls Dam. This interim treatment and disposal mode (expected to continue up to 3 years) would create some impacts not listed in the following tables.

The most significant of these first phase impacts would be the summer discharge of secondary treated effluent upstream from riverside residential development and Corbin Park, the main public river access between Post Falls and the Idaho/Washington state line. Corbin Park is a popular swimming and picnicking site, and is 1.3 miles below the proposed interim discharge site. The interim discharge would pose a public health threat to swimmers in this area, especially if treatment or disinfection malfunctions occurred.

The interim discharge is expected to be quite small; only .166 MGD is anticipated initially. This discharge is not expected to be treated for phosphorus removal. A 1 MGD discharge without phosphorus treatment would result in a 10 percent greater phosphorus load increase in the river during summer mean flow conditions than Alternative B at the 2.4 MGD discharge level. This would result, however, only in a change in the site of localized algal growth increases that would occur under Alternative B; a significant change in the degree of the water quality impact is not expected.

Table 1. No-Action Impacts and Mitigations

Area of Impact	Description of Impact	Possible Mitigations
Construction Losses	None.	
Surface Water Quality	None.	
Spokane River Fishery	None.	
Spokane River Uses	None.	
Health-Risk - Surface Waters	None.	
Health-Risk - Groundwater	Continued groundwater contamination (nitrates and possible other hazardous wastes) from use of on-site disposal systems.	Establish mandatory septic tank maintenance procedures. Limit future urbanization.
Costs	$75-$100 septic tank pumping charge every 5 years.	None required.
Energy Use	None.	
Land Use Conflicts	None.	
Growth Implications	Local growth could be reduced or halted by PHD aquifer protection polices in absence of new centralized wastewater system for Post Falls.	Allow development to continue with dry sewers and septic tanks and pursue central wastewater system at a later date.

Table 2. Impacts Common to the Three Action Alternatives
(A, B, and C)

Area of Impact	Description of Impact	Possible Mitigations
Construction Losses	Interceptor construction could damage archeological site 10-KA-44.	Survey interceptor line. Align interceptor to bypass site.
Surface Water Quality	Small increase in nutrients and heavy metals in Spokane River, November-April.	
Spokane River Fishery	Possible increased fish mortality in early life stages from heavy metals and toxins immediately downstream from outfall.	
Spokane River Uses	Possible psychological detraction to recreational users of river below wastewater discharge point.	Closely monitor efficiency of wastewater disinfection. Maximize outfall diffuser efficiency.
Health Risk - Surface Water	Treatment plant malfunction could cause serious health threat in downstream water supplies.	Provide emergency storage pond.
Costs	Total collection system cost of about $6.1 million.	Stage project construction. Seek most beneficial financing plan.
	Unspecified monthly user fee necessary to repay collection system costs.	
Growth Implications	2,169 urban acres added to Post Falls by 1987; 4,768 acres added by year 2000.	Encourage higher-than-present urban densities.
	Prime agricultural land will be lost to projected Post Falls growth.	Stronger local restrictions on agricultural land development. Preferential property tax assessment.

Table 2 (cont'd.)

Area of Impact	Description of Impact	Possible Mitigations
Growth Implications (cont'd.)		Limit funding of treatment capacity to include only those areas not overlying prime agricultural land.
	Increased urban runoff over "sole source" aquifer.	Continue nonpoint source pollution control through local ordinance and ongoing 208 planning.
	Increased local power demands.	Implement local energy conservation measures. Encourage conservation through tax incentives, mandatory retrofit, changes in building codes.
	Increased pressure on schools, roads, water supply, police, and fire protection and recreation facilities with subsequent economic burden on Post Falls.	Adopt local growth-control policies Rely on private entities for some public services (water supply, solid waste disposal, recreation facilities). Tie new development to existing infrastructure. Encourage infill. Require developers to share in public service costs.

Table 3. Alternative A Impacts and Mitigations

Area of Impact	Description of Impact	Possible Mitigations
Construction Losses*	15 acres of prime agricultural land lost to treatment plant (Site T-5; see Figure 1-2).	
Surface Water Quality	See Common Impacts, Table 2.	
Spokane River Fishery	See Common Impacts, Table 2.	
Spokane River Uses	See Common Impacts, Table 2.	
Health Risk - Surface Waters	See Common Impacts, Table 2.	
Health Risk - Groundwater	Increase in groundwater nitrate levels and potential contamination with other hazardous wastes from irrigation disposal.	Expand irrigated acreage. Inventory dischargers. Require pretreatment. Monitor effluent. Monitor groundwater.
Health Risk - Spray Irrigation	Health risk on lands adjacent to irrigation area due to wastewater aerosol drift.	Cease irrigation in high winds. Thoroughly disinfect wastewater. Plant vegetative screen around area. Maintain buffer strip. Use low trajectory, low pressure sprinklers.

*Construction impacts based on use of treatment plant Site T-5 and irrigation disposal Site S-1.

Table 3 (cont'd.)

Area of Impact	Description and Impact	Possible Mitigations
Costs	Unstaged present worth cost of $10.6 million (does not include collection system).	
	Monthly user cost of approximately $7.90 (excludes fee for collection system financing).	Stage project construction. Seek most beneficial financing plan.
Energy Use	Annual consumption of 5,872 million BTUs by 2002.	
Land Use Conflicts	Moderate odor and visual impacts from treatment plant due to proximity to town and main transportation corridors (Site T-5).	Construct visual screen around treatment plant.
	Gravel pit proposed for eastern edge of recommended irrigation area (S-1).	Leave buffer around gravel pit. Relocate gravel pit.
Growth Implications	See Common Impacts, Table 2.	

Table 4. Alternative B Impacts and Mitigations

Area of Impact	Description of Impact	Possible Mitigations
Construction Losses*	15 acres of prime agricultural land lost to treatment plant (Site T-5).	
Surface Water Quality	Enhanced algal production during summer months immediately below outfall and in downstream impounded areas.	
Spokane River Fishery	See Common Impacts, Table 2.	
Spokane River Uses	See Common Impacts, Table 2.	
Health Risk - Surface Waters	Increased risk to persons drawing domestic water supply from river below discharge in summer months.	Increase disinfection. Locate alternate water supplies.
	Increased health risk to water contact recreationists.	Increase disinfection.
Health Risk - Groundwater	Possible increase in groundwater nitrate levels and contamination with other hazardous wastes from river - groundwater interchange below outfall.	Optimize diffuser capability. Monitor effluent. Require pretreatment. Inventory dischargers.
Costs	Unstaged present worth cost of $8.7 million (does not include collection system).	
	Monthly user cost of approximately $8.65 (excludes fee for collection system financing).	Stage project construction. Seek most beneficial financing plan.
Energy Use	Annual consumption of 5,016 million BTUs by 2002.	

*Construction impacts based on use of treatment plant Site T-5.

Table 4 (cont'd.)

Area of Impact	Description of Impact	Possible Mitigations
Land Use Conflicts	Moderate odor and visual impacts from treatment plant due to proximity to town and main transportation corridors (Site T-5).	Construct visual screen around treatment plant.
Growth Implications	See Common Impacts, Table 2.	

Table 5. Alternative C Impacts and Mitigations

Area of Impact	Description of Impact	Possible Mitigations
Construction Losses*	See Common Impacts, Table 2.	
Surface Water Quality	See Common Impacts, Table 2.	
Spokane River Fishery	See Common Impacts, Table 2.	
Spokane River Uses	See Common Impacts, Table 2.	
Health Risk - Surface Water	See Common Impacts, Table 2.	
Health Risk - Groundwater	Increase in groundwater nitrate levels and potential contamination with other hazardous wastes from irrigation disposal.	Expand irrigated acreage. Inventory dischargers. Require pretreatment. Monitor effluent. Monitor groundwater.
Health Risk - Spray Irrigation	Health risk on lands adjacent to irrigation area due to wastewater aerosol drift.	Cease irrigation in high winds. Thoroughly disinfect wastewater. Plant vegetation screen around area. Maintain buffer strip. Use low trajectory, low pressure sprinklers.
Costs	Unstaged present worth cost of $9.8 million (does not include collection system).	
	Monthly user cost of approximately $7.10 (excludes fee for collection system financing).	Stage project construction. Seek most beneficial financing plan.

*Construction impacts based on use of treatment plant Site T-6 and irrigation disposal Site S-1.

Table 5 (cont'd.)

Area of Impact	Description of Impact	Possible Mitigations
Energy Use	Annual consumption of 5,151 million BTUs by 2002.	
Land Use Conflicts	No significant conflict at Site T-6.	
	Gravel pit proposed for eastern edge of recommended irrigation area (S-1).	Leave buffer around gravel pit. Relocate gravel pit.
Growth Implications	See Common Impacts, Table 2.	

Summary Comparison of Alternatives

Under the "no-action" alternative, on-site waste disposal practices in the Post Falls area would continue to contribute contaminants, including nitrate, to the groundwater in the Rathdrum Prairie aquifer. This poses a continuing public health threat to the large population that draws its drinking water from the aquifer downgradient. Capital outlay for new wastewater facilities would be avoided, and local population growth could be restricted by the aquifer protection policies of the PHD.

Implementation of any of the three "action" alternatives (A, B, and C) would begin the process of eliminating septic tank and cesspool use over the aquifer. This is a primary goal of the proposed wastewater facilities. Each would also involve a winter (November-April) discharge of secondary treated wastewater to the Spokane River. This would cause minor impacts to river water quality, fisheries and beneficial uses.

The major differences in the environmental impact of the three action alternatives relate to project costs and method of summer (May-October) wastewater disposal. Alternative A, which proposes mechanical biological secondary treatment and summer irrigation of effluent, is the most costly project on a present worth basis. Its unstaged present worth cost ($10.6 million) is $800,000 greater than Alternative C and $1.9 million greater than Alternative B (this does not take into account possible cost-effective preferences available to the irrigation disposal facilities of Alternatives A and C as alternative technology). The proposed irrigation disposal operation of Alternative A would lead to increased levels of nitrate, and possibly other hazardous materials, in the groundwater below the disposal site. A major effluent and groundwater quality monitoring program would be required for Alternative A to ensure protection of the Rathdrum Prairie aquifer water supply.

Alternative B, which proposes mechanical secondary treatment, seasonal phosphorus removal, and year-round discharge of effluent to the Spokane River, has a present worth cost of $8.7 million. This is $1.9 million less than Alternative A and $1.1 million less than Alternative C. Its year-round river discharge allows for easy effluent monitoring and should have less chance of significantly affecting the quality of groundwater in the Rathdrum Prairie aquifer than does land disposal. The summer discharge would, however, enhance algal production in the river immediately below the outfall. It might also enhance algal production in downstream water impoundments.

Alternative C is basically the same as Alternative A, but the secondary treatment would occur in a series of aerated lagoons rather than in a mechanical (extended aeration) treatment plant. The lagoon system requires more land (40 acres rather than 15) and would therefore be located farther from downtown Post Falls. The water quality, public health, and beneficial use impacts of C would be the same as A. The present worth cost of Alternative C ($9.8 million) is $800,000 less than A and $1.1 million greater than B.

Coordination

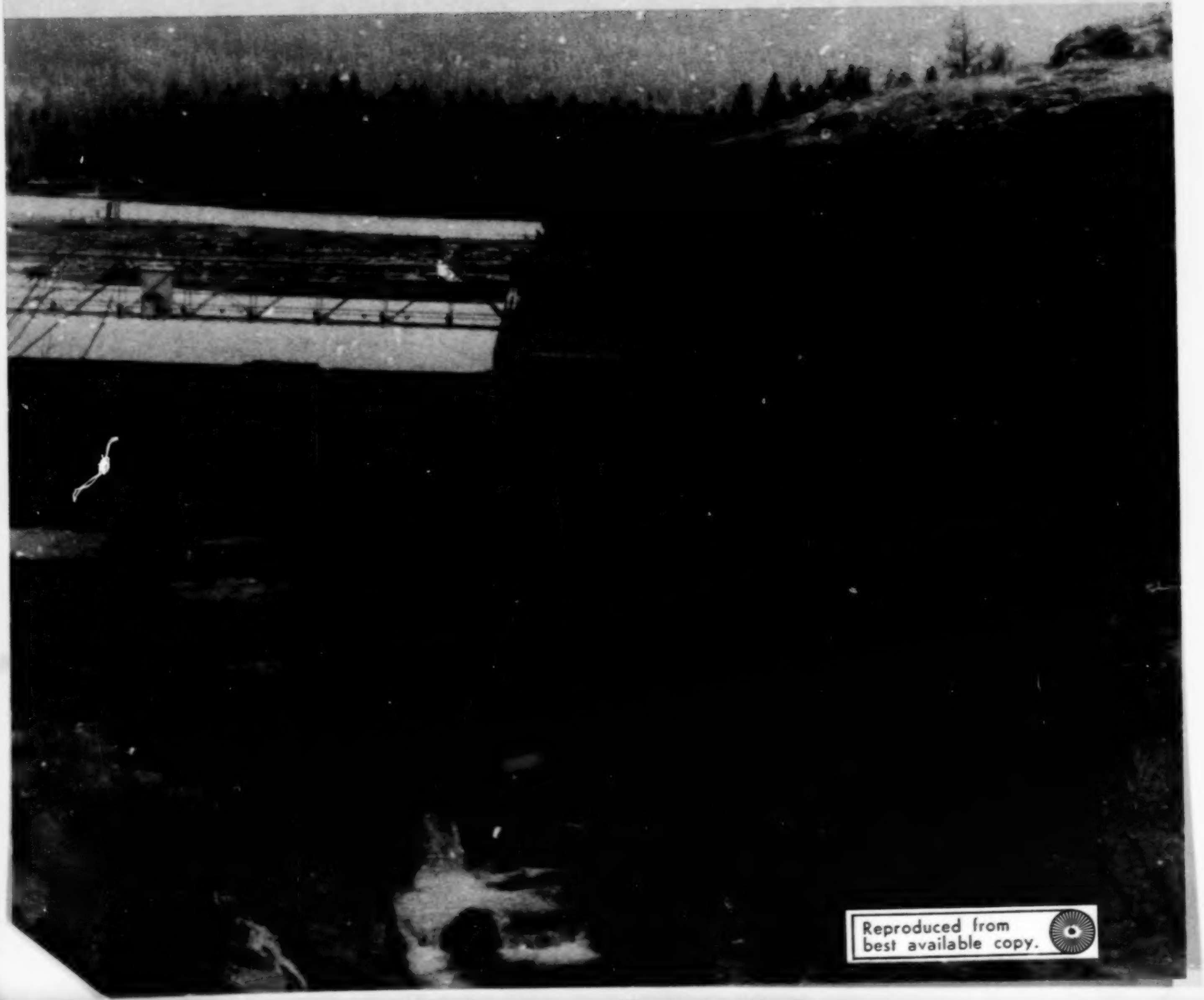
Public participation and coordination for the Post Falls facilities plan began in the summer of 1977 with the formation of a citizens' steering committee. This group met from the summer of 1977 to the fall of 1979, advising the city with regard to project direction and alternatives. Since initiation of the project EIS in June 1979, there has been an EIS scoping meeting (June 4, 1979 in Coeur d'Alene, Idaho) and frequent EPA contact with local and state agencies and private citizens. These efforts have sought to identify environmental issues related to the wastewater facilities plan and to collect background environmental data for use in preparation of this EIS.

As a result of this coordination, several potential project alternatives have been dropped from the facilities plan (treatment at Liberty Lake; joint treatment with Coeur d'Alene) and several new possible treatment plant sites have been added (T-1A, T-5, and T-6; see Figure 1-2). In addition, the coordination efforts have allowed EPA to identify and focus on the key environmental issues in this EIS.

Further EIS coordination is planned. EPA will conduct a public hearing on this Draft EIS at 7:30 p.m. on April 6, 1981, in the Multipurpose Room of Frederick Post Elementary School, 201 W. Mullan Avenue in Post Falls. All interested citizens are invited to attend and written and oral comments will be received. EPA will respond to comments in the Final EIS.

CHAPTER 1

EXISTING AND PROPOSED WASTEWATER FACILITIES



Reproduced from
best available copy.

Chapter 1

EXISTING AND PROPOSED WASTEWATER FACILITIES

Introduction

At present, Post Falls is the largest city in Idaho without centralized wastewater collection, treatment, and disposal facilities. Each home or business in Post Falls relies on a septic tank or other type of individual on-site system for wastewater treatment and disposal.

Since no wastewater system now exists, a collection network, a treatment plant and an effluent disposal system must be constructed. Because each of these three components can be considered somewhat discrete, each is discussed individually in following subsections.

Effluent quality limitations have a significant impact on the types of treatment which can be utilized, the cost of treatment, and the methods of effluent discharge which are possible. The methods of effluent disposal which are feasible for this project are discharge to the Spokane River and land application. Relative to a Spokane River discharge, the principal limitation being considered by EPA and the Idaho Department of Health and Welfare (IDHW) would require 85 percent removal of phosphorus between April 1 and October 31 when the design flow of the plant exceeds 1.0 MGD. Wastewater flow projections developed by the facilities planners indicate that this 1.0 MGD limit could be reached in 1982, and therefore all alternatives were developed with a means of achieving this objective. Raw wastewater is projected to have a total phosphorus concentration of 12 mg/l, and the requirement for 85 percent removal would require that the effluent phosphorus be reduced to less than 1.8 mg/l. The State of Idaho's secondary treatment requirements of BOD $\leq$30 mg/l and SS $\leq$30 mg/l would also have to be met for a Spokane River discharge.

A discharge concept which could be used to meet the phosphorus limitation to the river is to combine a winter discharge to the Spokane River with a summer discharge to agricultural land. A major problem with this concept is the required timing (April 1) for switching from river discharge to land application. In many years, April 1 is too early to begin irrigation of agricultural lands because the soil is still saturated by winter rains and the fields have not been planted. To help alleviate this problem, the facilities plan includes a 15-day storage pond for the land application alternatives. This would start to be filled on April 1 of each year. If agricultural irrigation could begin prior to April 15, the stored effluent would gradually be used thereafter. If agricultural irrigation could not begin by April 15, the storage pond would be filled. Discharge to the river would be necessary until irrigation commences. In the fall, irrigation would terminate on October 15, and filling of the storage pond would begin on this date. After October 31, discharge of plant effluent to the river would begin, as well as gradual release of the storage pond contents to the river. The IDHW has been contacted regarding the possibility of a waiver from strict compliance with the April 1 and October 31 deadlines, if diligent efforts were made by the city to achieve effluent standards. The IDHW indicated that the April 1 and October 31 dates were selected using river water temperature as a criterion, and that they would consider the possibility of a waiver if requested by the City of Post Falls (Coony pers. comm.). No decision has been reached on granting a waiver.

For land application of effluent, the current IDHW policy requires that the quality of any effluent reaching the groundwater be at least equal to the groundwater quality, or meet the maximum contaminant limits (MCLs) established by the National Interim Primary Drinking Water Regulations (NIPDWR), whichever is more stringent. As existing groundwater quality is presently better than the MCLs of the NIPDWR, the existing groundwater quality would be the controlling factor in a land application concept. The IDHW is in the process of defining a comprehensive policy and evaluation criteria for land application schemes based primarily on nitrogen application rates. This policy, which may have a major influence on the viability of a land disposal scheme for the City of Post Falls, should be fully established prior to completion of this project's final EIS. Using nitrogen loading rate criteria, developed by the facilities planners, a required land area of 362 acres was prescribed in the facilities plan. On the basis of a 180-day per year irrigation schedule, this is equivalent to a hydraulic application rate of 3.6 feet per acre per year (at the design flow of 2.4 million gallons per day).

Collection System Alternatives

In the draft facilities plan, LePard and Frame selected a conventional gravity sewer system (Figure 1-1) over either a pressure sewer system or a vacuum collection system because the terrain is conducive to gravity collection and the cost

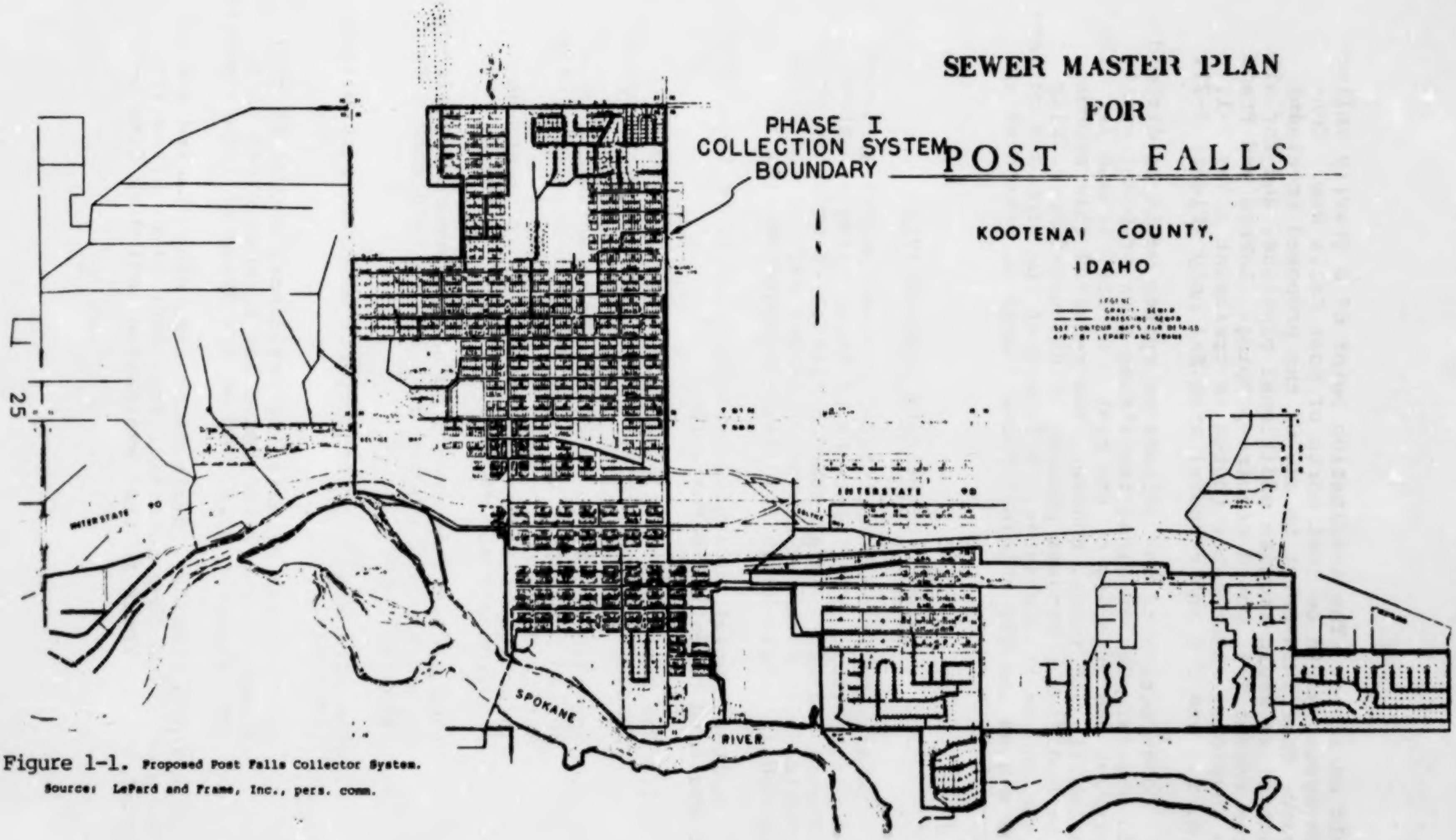


Figure 1-1. Proposed Post Falls Collector System.

Source: LePard and Frame, Inc., pers. comm.

would be lower. The termination point of a gravity collection system would be just north of Post Falls Dam. Conveyance from this point to any of the proposed treatment plant sites would require additional pipeline, and for all sites except T-4, would require pumping. LePard and Frame has developed interceptor routes to treatment sites T-1, T-1A, T-5 and T-6 and disposal area S-1 only (Figure 1-2).

Construction of the collection system would be divided into phases. The original facilities plan proposal was to construct the majority of the system by 1987 (Phase I). The availability of funds, however, has required this approach to be modified. Project phasing is discussed more fully at the end of this chapter. A layout of the proposed collection system and the original Phase I area is presented as Figure 1-1.

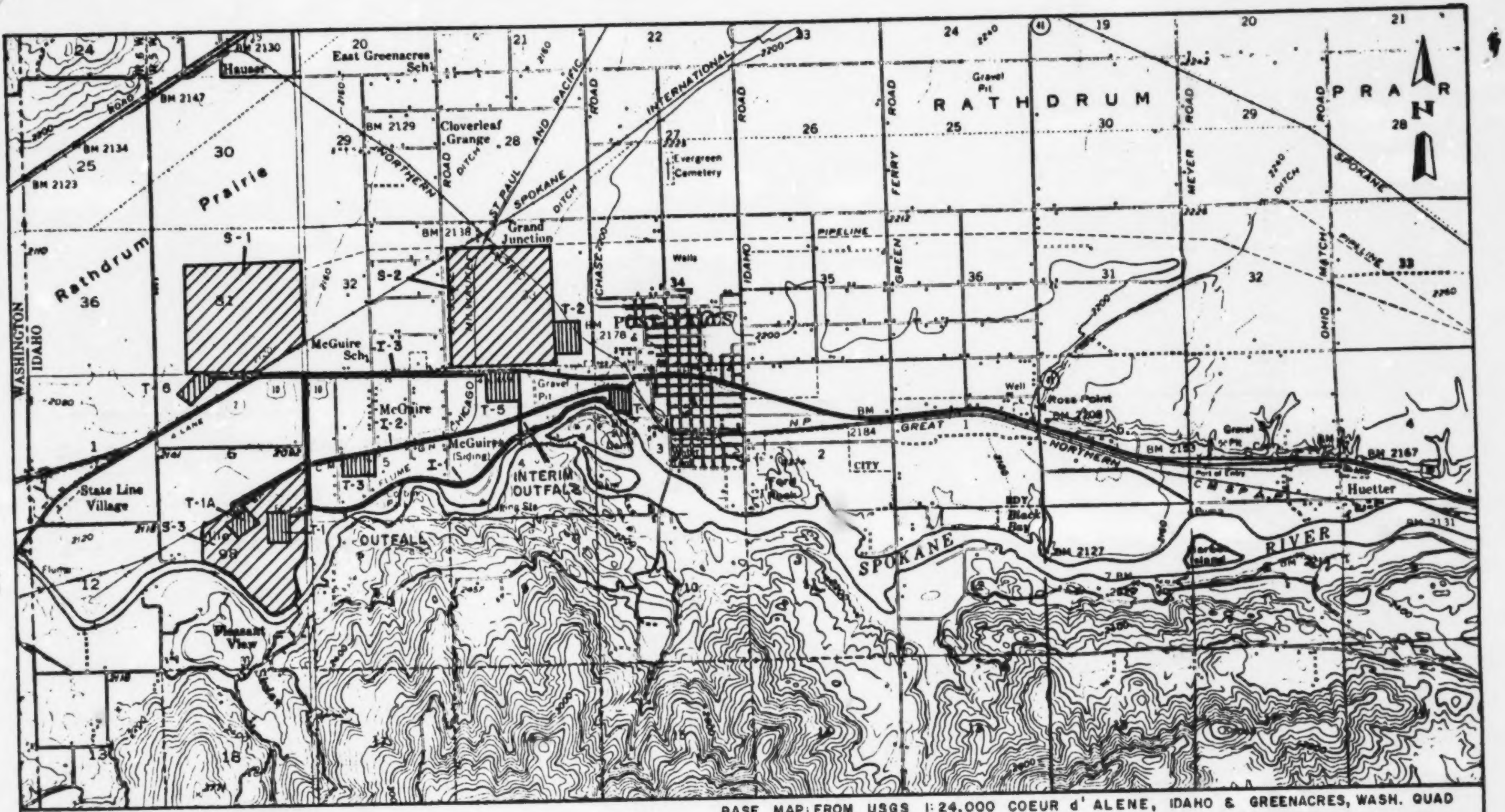
Treatment Plant Site Alternatives

LePard and Frame has considered seven potential treatment plant sites. The locations of these sites are shown in Figure 1-2 and general characteristics of each are shown in Table 1-1. With the exception of T-4 each of the sites selected is large enough for ultimate requirements.

Criteria which were used by LePard and Frame to compare and evaluate potential sites were:

1. The site should allow as much gravity flow as possible, and minimize the requirement for pumping.
2. The site should be large enough to serve the projected population at least 20 years into the future. Sufficient land should also be available for construction of additional facilities if treatment requirements become more stringent in the future.
3. Land acquisition should be easily secured, preferably as one parcel, and the cost of the land should be relatively low.
4. The site should preferably not be prime agricultural farmland.
5. Displacement of existing residences should be minimized and the site should not be near areas which are presently developed or are areas of future growth.

In the preliminary draft facilities plan, LePard and Frame identified four potential treatment plant sites (T-1 through T-4). Their initial evaluation indicated Site T-1



BASE MAP: FROM USGS 1:24,000 COEUR d' ALENE, IDAHO & GREENACRES, WASH. QUAD

-LEGEND-

- I — INTERCEPTOR
- ▨ IRRIGATION DISPOSAL SITE
- ▥ TREATMENT PLANT SITE

Reproduced from best available copy.

FIGURE 1-2. POST FALLS PROPOSED TREATMENT PLANT SITE & DISPOSAL AREA ALTERNATIVES

Table 1-1. Characteristics of Potential Treatment Plant Sites

Site	Present Use	Probable Future Use	Close to Existing Residential Development
T-1	Irrigated agriculture	Irrigated agriculture	Yes
T-2	Irrigated agriculture	Industrial	Yes
T-3	Agriculture, rural residential	Agriculture, rural residential	Yes
T-4	None	None	No
T-5	Irrigated agriculture	Commercial, industrial	No
T-6	Grazing	Grazing	No
T-1A	Irrigated agriculture	Industrial	No

was the best. It was the preferred site described during the city's bond election campaign. However, recent complaints expressed by residents across Pleasantview Road from Site T-1 have led LePard and Frame to investigate three more sites, T-1A, T-5 and T-6. On October 10, 1980, the facilities plan citizens' steering committee and the Post Falls City Council accepted a recommendation by the facilities planners to use Site T-5.

River Discharge Location Alternatives

Considerations which affect the selection of a location for an outfall to the Spokane River include the impact of the discharge on river water quality, the proximity of the outfall to the proposed treatment plant site and the proximity of the discharge to riverside development. Outfall locations above the dam were not considered for two reasons. First, during certain times of the year, effluent would be warmer than the river water and effluent would tend to rise to the surface, thereby causing aesthetic and potential public health problems due to the concentrated use of the area behind the dam for swimming and other recreational activities. A second reason for rejection of outfall locations above the dam is that pumping would be required from all six of the potential treatment plant sites, and significant lengths of force main would be required in most cases.

For an outfall below the dam, the most logical location is adjacent to the plant site, or a location which can be reached from the plant site by gravity flow. Only one permanent river discharge location has been described by LePard and Frame to date (Figure 1-2). This was originally intended to be used in conjunction with treatment Site T-1. The preferred treatment site has now been changed, but this outfall site is still considered the most appropriate. Because of funding limitations, however, LePard and Frame has identified an interim outfall site to be used in conjunction with treatment Site T-5 (see Figure 1-2).

Land Application Site Alternatives

Three areas were selected for detailed evaluation as potential land application sites and the principal factors which were included in the evaluation are items 2, 3, 4, and 5 which were previously listed under Treatment Plant Site Alternatives. Characteristics of the proposed sites are shown in Table 1-2, and locations of the three land application sites considered are shown in Figure 1-2.

Table 1-2. Characteristics of Potential Land Application Sites

Site	Present Use	Probable Future Use	Adjacent to Existing Residential Development
S-1	Grazing	Grazing, gravel	No
S-2	Irrigated agriculture	Industrial	Yes
S-3	Irrigated agriculture	Residential, industrial	No

Site S-1 is the land application site which has been tentatively selected by LePard and Frame, principally because it is available and is not near existing development. The present landowner of S-2 does not want to sell; the site is a potential location for an industrial park. Site S-3 was also initially rejected because the owner does not currently wish to sell, and because it is considered to be prime riverfront property which would have a high acquisition cost.

Total Wastewater System Alternatives

The Draft and Final Draft Post Falls Facilities Plans prepared by LePard and Frame (1980) and 1980a) present three alternative wastewater management plans to serve Post Falls, and a "no-action" plan in accordance with EPA regulations. The alternative concepts which are included in the facilities plan are discussed in the following subsections. The reader should bear in mind that although the alternatives in the facilities plan are based on 2.4 MGD capacity, the state has recommended 1.5 MGD capacity. (See Project Size and Phasing, Page 9). Following this presentation of alternatives, sections are included on alternatives which were considered and then deleted, and on project phasing.

No-Action Alternative

This concept would be the continuation of the current use of septic tanks and other on-site systems in Post Falls. No central wastewater collection, treatment, or disposal facilities would be constructed. Nitrate contamination of the groundwater would continue, and could be expected to worsen as growth within Post Falls continues. It is possible that the State of Idaho would impose growth control measures in Post Falls if this alternative were followed. A no-action alternative would not follow policy of the Panhandle Health District (PHD), which allows high density development as an interim measure only until a sewerage collection system is constructed. The estimated cost to existing septic tank users would average $81 per year for periodic drain field replacement and septic tank pumping.

Alternative A - Mechanical Biological Treatment with Seasonal Land and River Discharge

This alternative would require a 2.4 MGD extended aeration activated sludge plant which would be constructed on about 15 acres of land. A schematic flow diagram showing the principal treatment processes is shown in Figure 1-3. Between roughly April 15 and October 15 effluent would be applied to agricultural land, and between October 31 and April 1, effluent would be discharged to the Spokane River

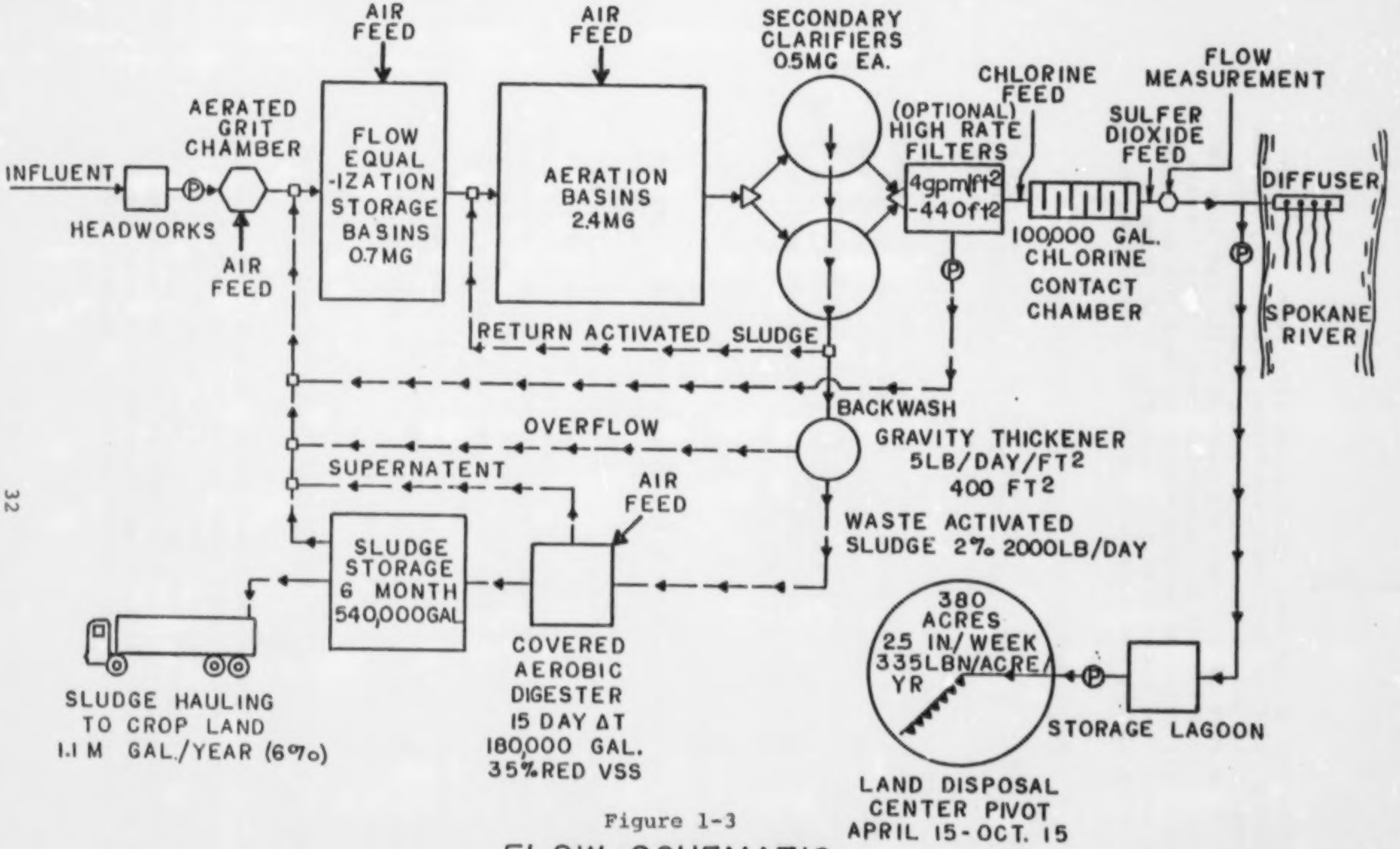

AIR FEED
AIR FEED
SECONDARY CLARIFIERS 0.5MG EA.
CHLORINE FEED
FLOW MEASUREMENT
AERATED GRIT CHAMBER
(OPTIONAL) HIGH RATE FILTERS
SULFER DIOXIDE FEED
INFLUENT
FLOW EQUAL -IZATION STORAGE BASINS 0.7MG
AERATION BASINS 2.4MG
4gpm/ft2 -440ft2
DIFFUSER
HEADWORKS
100,000 GAL. CHLORINE CONTACT CHAMBER
AIR FEED
SPOKANE RIVER
RETURN ACTIVATED SLUDGE
BACKWASH
OVERFLOW
GRAVITY THICKENER 5LB/DAY/FT2 400 FT2
SUPERNATENT
AIR FEED
WASTE ACTIVATED SLUDGE 2% 2000LB/DAY
SLUDGE STORAGE 6 MONTH 540,000GAL
380 ACRES 2.5 IN/WEEK 335LBN/ACRE/YR
SLUDGE HAULING TO CROP LAND 1.1 M GAL./YEAR (6%)
COVERED AEROBIC DIGESTER 15 DAY ΔT 180,000 GAL. 35% RED VSS
STORAGE LAGOON
LAND DISPOSAL CENTER PIVOT APRIL 15-OCT. 15

Figure 1-3

FLOW SCHEMATIC

2.4MGD

ALTERNATIVE (A)

MECHANICAL BIOLOGICAL TREATMENT WITH SEASONAL LAND DISPOSAL AND DISCHARGE TO SPOKANE RIVER DURING THE NON GROWING SEASON.

SOURCE: LePard and Frame 1980a.

(without phosphorus removal). For two 15-day periods, April 1 to April 15, and October 15 to October 31, effluent would be stored in a 15-day retention pond at the irrigation area.

The agricultural land application site requirements are 380 acres. On this 380-acre site, 362 acres would be used for growth of green chop forage (probably orchard grass and alfalfa), and the remaining 18 acres would be comprised of a buffer zone with an average width of 75 feet. The purpose of the buffer zone would be to control aerosol drift. The wastewater application rate proposed in the draft facilities plan was governed by a nitrogen loading rate designed to prevent degradation of the Rathdrum Prairie aquifer. During the 6-month period of application, 3.6 feet of wastewater would be applied, and an estimated 6 tons per acre per year of green chop could be produced at an average value of $20 per ton (Kimball, pers. comm.).

The treatment process to be used in Alternative A is extended aeration activated sludge, followed by filtration, chlorination, and dechlorination (when discharge is to the river during low flow periods). Flow equalization would be used prior to the activated sludge process to improve overall efficiency, and a 15-day storage lagoon would be available for use during agricultural harvesting. Sludge would be aerobically digested on-site and would be stored on-site until it could be applied to agricultural land.

The filtration and dechlorination processes are considered supplemental to conventional secondary treatment; therefore, they can be funded by EPA only after it is adequately documented that the extra treatment is necessary to meet water quality standards.

Alternative B - Mechanical Biological Treatment and Continuous River Discharge

Treatment in Alternative B would be similar to the treatment in Alternative A, with the major exception that alum and polymer would be added during treatment between April 1 and October 31 in order to precipitate up to 85 percent of the phosphorus in the raw wastewater. During the April-October river discharge, the chlorine dosage would be high to assure a high level of disinfection. A reduction in the effluent chlorine residual would be achieved by addition of sulfur dioxide during low river flows. The specific flow condition that would be used as a starting point for dechlorination has not been described in the facilities plan. A schematic flow diagram of Alternative B is shown in Figure 1-4.

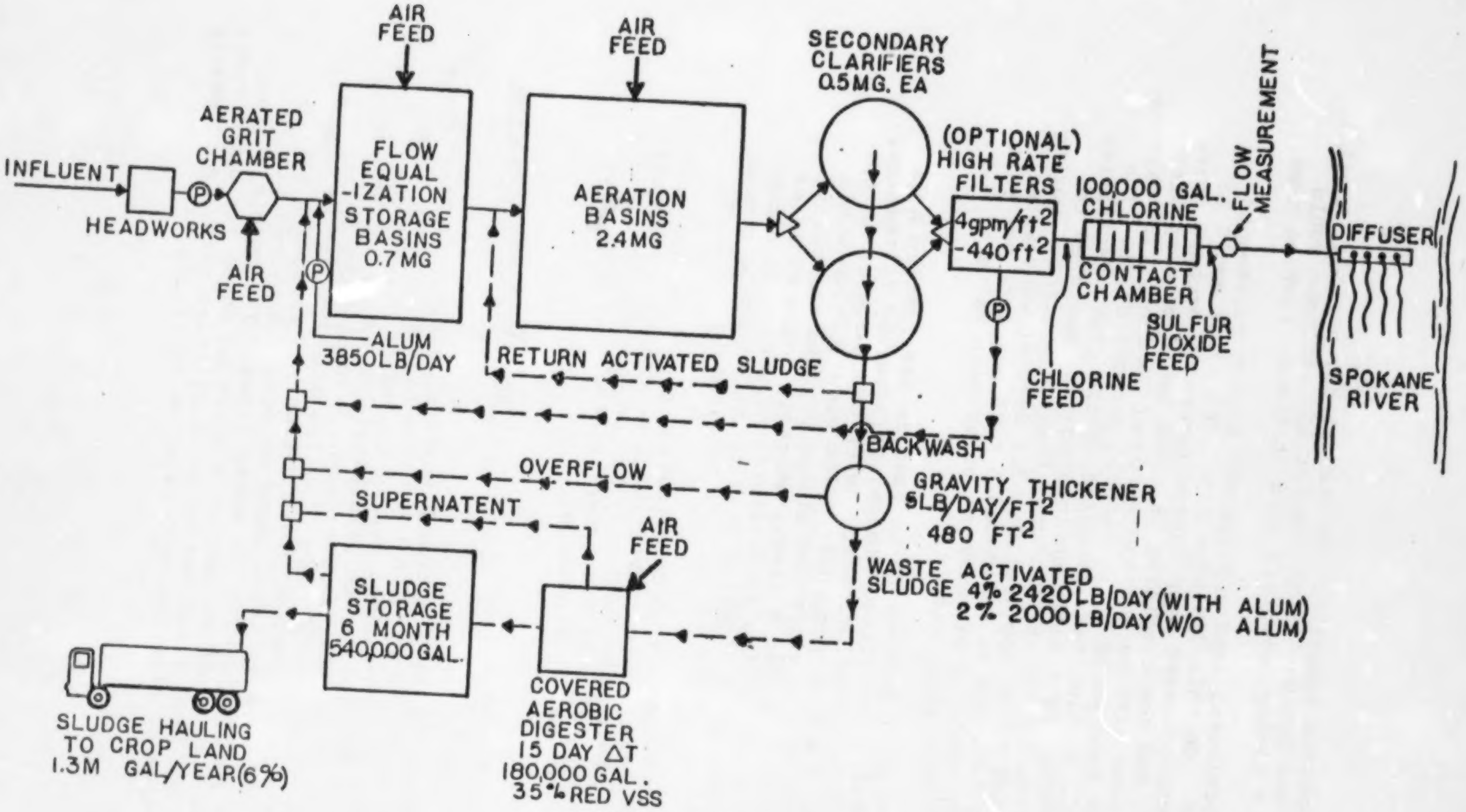

INFLUENT
HEADWORKS
P
AERATED GRIT CHAMBER
AIR FEED
AIR FEED
FLOW EQUAL -IZATION STORAGE BASINS 0.7 MG
P
ALUM 3850 LB/DAY
AIR FEED
AERATION BASINS 2.4 MG
SECONDARY CLARIFIERS 0.5 MG. EA
(OPTIONAL) HIGH RATE FILTERS
4gpm/ft2 -440 ft2
P
100,000 GAL. CHLORINE CONTACT CHAMBER
CHLORINE FEED
SULFUR DIOXIDE FEED
FLOW MEASUREMENT
DIFFUSER
SPOKANE RIVER
RETURN ACTIVATED SLUDGE
BACKWASH
OVERFLOW
SUPERNATENT
GRAVITY THICKENER 5LB/DAY/FT2 480 FT2
WASTE ACTIVATED SLUDGE 4% 2420 LB/DAY (WITH ALUM) 2% 2000 LB/DAY (W/O ALUM)
AIR FEED
COVERED AEROBIC DIGESTER 15 DAY ΔT 180,000 GAL. 35% RED VSS
SLUDGE STORAGE 6 MONTH 540,000 GAL.
SLUDGE HAULING TO CROP LAND 1.3M GAL/YEAR (6%)

Figure 1-4

FLOW SCHEMATIC
2.4 MGD
ALTERNATIVE (B)
MECHANICAL BIOLOGICAL TREATMENT WITH SEASONAL CHEMICAL PHOSPHOROUS REMOVAL AND CONTINOUS RIVER DISCHARGE.

SOURCE: LePard and Frame 1980a.

A larger quantity of sludge would be produced in Alternative B because of the chemicals added for phosphorus removal. Sludge disposal would follow the same concept as Alternative A.

Alternative C - Aerated Lagoon Treatment with Seasonal Land and River Discharge

For Alternative C, two aerated lagoons would be used for treatment. Each lagoon would provide 15 days of detention time at the design flow of 2.4 MGD, and the overall area covered by the treatment plant site would be 40 acres. Following the aerated lagoons, a flotation/filtration process would be used during the river discharge mode to remove algae and other suspended solids, and then the flow would be chlorinated for disinfection purposes. Dechlorination of the effluent would be practiced when discharging to the river in low flows. Between April 15 and October 15, the treated wastewater would be sprinkler irrigated on land as described for Alternative A. In the April 1 to April 15 and October 15 to October 31 periods, the wastewater would be stored in one of the aerated lagoons. It would subsequently be released back into the disposal system. A schematic flow diagram of the major treatment process components is shown in Figure 1-5.

The majority of the biological cells produced during treatment are retained in the aerated lagoons, and are aerobically digested in the lagoons. Solid material removed during the flotation/filtration process would be digested in a small aerobic digester, and the product from the digester would be disposed of on agricultural land.

Wastewater Management Alternatives Considered and Deleted

LePard and Frame, in conjunction with Brown and Caldwell, the facilities plan consultants for Coeur d'Alene, developed an alternative concept which would serve both Post Falls and Coeur d'Alene. The alternative would not require any changes in the wastewater collection system of either town (except some parts of the Post Falls system would have to be larger to accommodate the conveyance of the Coeur d'Alene flows). Wastewater from Coeur d'Alene would be conveyed to Post Falls by both force main and gravity flow. Three pumping stations would be required, one at the existing Coeur d'Alene plant site, and two between Coeur d'Alene and Post Falls. The total pipeline distance between the existing Coeur d'Alene plant site and treatment plant Site T-1 is approximately 11 miles.

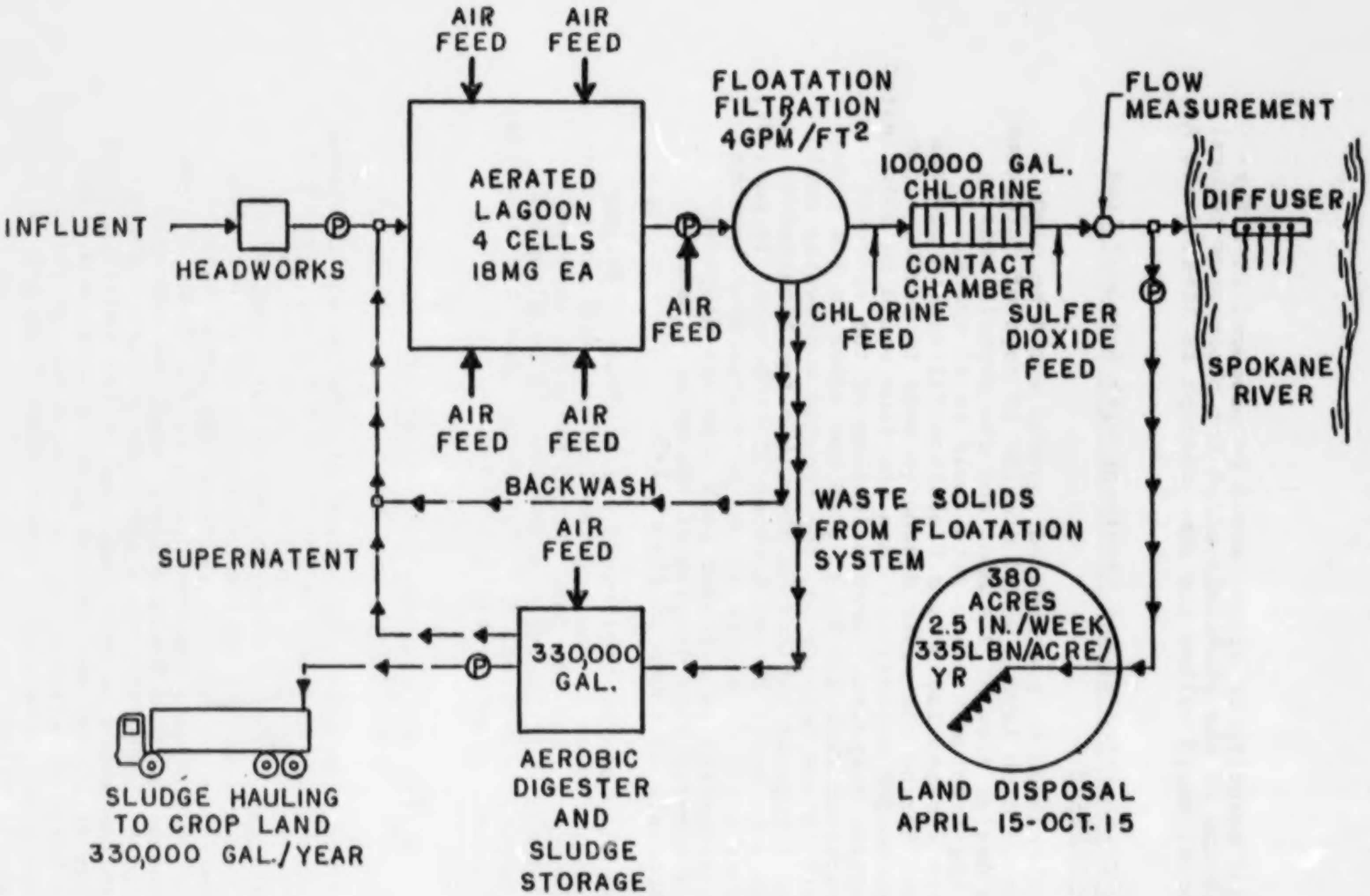

AIR FEED
AIR FEED
AIR FEED
AIR FEED
INFLUENT
HEADWORKS
AERATED LAGOON 4 CELLS 18MG EA
AIR FEED
FLOATATION FILTRATION 4GPM/FT2
100,000 GAL. CHLORINE
CONTACT CHAMBER
CHLORINE FEED
SULFER DIOXIDE FEED
FLOW MEASUREMENT
DIFFUSER
SPOKANE RIVER
BACKWASH
SUPERNATENT
WASTE SOLIDS FROM FLOATATION SYSTEM
AIR FEED
330,000 GAL.
AEROBIC DIGESTER AND SLUDGE STORAGE
SLUDGE HAULING TO CROP LAND 330,000 GAL./YEAR
380 ACRES 2.5 IN./WEEK 335LBN/ACRE/YR
LAND DISPOSAL APRIL 15-OCT. 15

Figure 1-5

FLOW SCHEMATIC
2.4MGD
ALTERNATIVE (C)
AERATED LAGOON TREATMENT WITH SEASONAL LAND DISPOSAL AND DISCHARGE TO THE SPOKANE RIVER DURING NON GROWING SEASON.

SOURCE: LePard and Frame 1980a.

The alternative was developed using average daily dry weather flows of 2.4 MGD for Post Falls and 6.0 MGD for Coeur d'Alene. The alternative assumed year-round discharge of flow to the Spokane River, with a requirement for 85 percent phosphorus removal between April 1 and October 31.

This alternative was deleted from detailed consideration because the initial cost estimates indicated it was significantly more expensive than Alternatives A, B and C, and also because neither Post Falls nor Coeur d'Alene was supportive of a regional solution to wastewater management.

LePard and Frame also initially considered an alternative that would transfer Post Falls' untreated wastewater to the proposed Liberty Lake, Washington treatment plant. The Liberty Lake site is 5.5 miles west of Post Falls' treatment Site T-1. The Liberty Lake plant will discharge effluent to the Spokane River, without removing phosphorus. LePard and Frame dropped this alternative due to high costs and likely problems with phosphorus removal requirements on flows exceeding 1 MGD. A 1 MGD Liberty Lake plant is now under construction.

The final alternative which was dropped involved an aerated lagoon with continuous year-round discharge to the Spokane River. Flotation/filtration would be utilized similar to Alternative C, but the flotation/filtration would have to remove phosphorus as well as suspended solids and BOD. This alternative was dropped because of the unproven large-scale applicability of flotation/filtration for phosphorus removal.

Project Phasing and Proposed City Action

The first draft of the Post Falls facilities plan (LePard and Frame 1980) proposed constructing the wastewater facilities in several phases. The first phase would supply a collection system, treatment plant and disposal mode for up to 1.2 MGD of flow. This would accommodate a population of 13,600 and would meet demands through 1987. Additional facilities would be added in 5-year increments, with a year 2002 capacity of 2.4 MGD and a design population of 26,840.

Since issuance of the first draft, several factors have caused the facilities planners to adjust this phasing. It now appears that state grant money and loans needed to finance both the collection system and the treatment plant are not going to be available in the amounts originally estimated. It has also become apparent that state and federal grant funds will not be made available for the high population and flow forecasts presented in the draft facilities plan. The state has recommended planning for a 20-year waste flow of 1.5 MGD rather than the 2.4 MGD proposed by LePard and Frame.

As a result, LePard and Frame has made some revisions to its proposed Phase I project. Some of these revisions are reflected in the final draft facilities plan (LePard and Frame 1980a) and some are yet to be incorporated. The current recommended plan is to construct a 1.0 MGD treatment plant at treatment Site T-5. A scaled-down first phase collection system would also be constructed, and an interim river outfall would carry effluent to the river just below Post Falls Dam year-round (Figure 1-2). The area to be provided collection service in this first phase has not yet been identified. The 1.0 MGD plant size is intended to avoid the immediate need for phosphorus removal facilities. The collection system would be enlarged in about 3 years as more financing became available, and the river discharge point would be moved to a permanent location farther downstream. The summer land application facilities prescribed for Alternative A would also be constructed and put into operation.

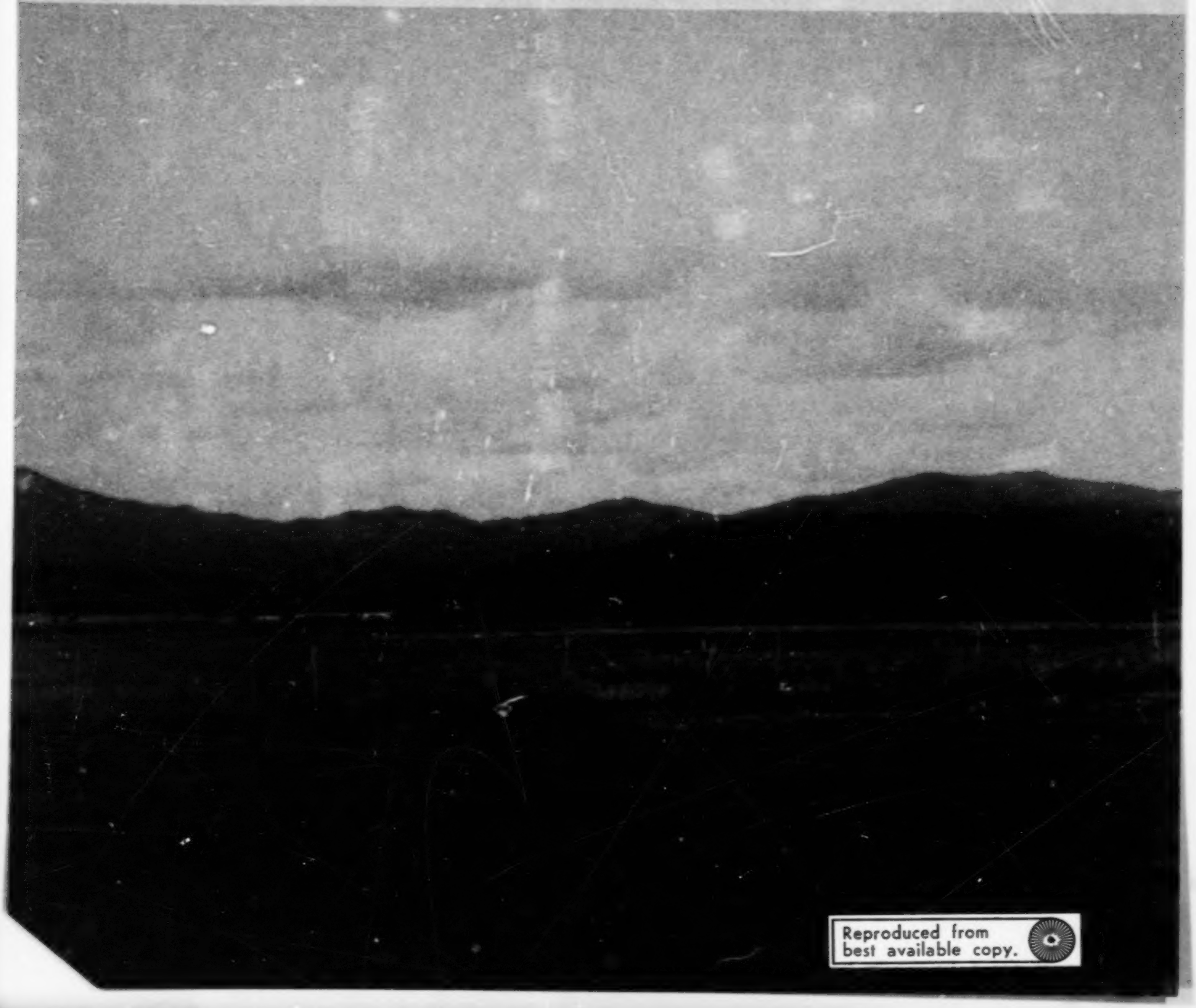
The second phase of treatment plant construction is not clear at this time. Its size and timing depends on the rate of growth in the Post Falls area and the progression of collection system expansion. Population projections approved by the state would allow eventual expansion to 1.5 MGD to meet the 20-year treatment needs of the Post Falls area.

This revised project phasing is being considered as a means to implement Alternative A in this Draft EIS. It should be noted, however, that the city may in the future decide that state and federal regulation of land application of wastewater over the aquifer make it too costly to operate an irrigation disposal system. In this case, phosphorus removal equipment could be added to the treatment plant and the year-round river discharge could be permanent. This is the Alternative B facilities plan proposal.

38.a

CHAPTER 2

ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES



Reproduced from
best available copy.

Chapter 2

ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

Introduction

This chapter of the report discusses the major environmental issues associated with the City of Post Falls' proposed wastewater facilities plans. The issues have been identified through the planning process and by discussing the project with government agency personnel, local residents and other concerned individuals. Each subsection deals with an individual issue. The issue is identified, pertinent background data are presented or cited, the relationship of each facilities plan alternative to the issue is discussed and mitigation measures are suggested where significant adverse environmental impacts have been identified.

Construction Disruptions of Significance

Construction of wastewater facilities typically results in an assortment of short-term nuisance impacts to man. This includes the production of noise, dust and aesthetic disruptions as well as creation of temporary access problems and safety hazards. These impacts are usually insignificant and readily mitigable. Occasionally more significant impacts are created; this might include destruction or disturbance to valuable wildlife habitat, historic or cultural resources, agricultural land, scenic vistas or major recreation areas. The significant construction impacts identified after reviewing the Post Falls facilities plan alternatives are described below.

Treatment Plant Construction

Seven potential treatment plant sites have been investigated by the City of Post Falls (T-1 through T-6 and T-1A). The original recommendation of the facilities planners was Site T-1, but subsequent protests by local residents resulted in identification of a new preferred site, T-5 (See Figure 1-2).

Construction at Site T-1 would remove 15-40 acres of irrigated agricultural land now being used for grass seed production. The land qualifies as prime agricultural land under the U. S. Soil Conservation Service Land Inventory and Monitoring Memorandum (LIM) definition (U. S. Soil Conservation Service, pers. comm.). The Garrison gravelly silt loam

(0-7 percent slopes) found on the site is considered prime if slopes are less than 5 percent and it is irrigated. Fifteen acres would be required for Alternatives A and B, and 40 acres would be required for Alternative C. Land grading and the operation of heavy equipment during construction would create short-term noise, dust and visual impacts on residents of the housing development located across Pleasantview Road to the northeast of T-1. These impacts could be kept to a minimum by initiating standard construction mitigation techniques. However, the presence of heavy trucks on Pleasantview Road and heavy equipment across from the residential area could create a serious safety hazard. Trucks passing through the one-lane railroad undercrossing north of Site T-1 could be especially hazardous to auto traffic and pedestrians.

Site T-1A is located just one-quarter mile west of Site T-1 (see Figure 1-2). Its use would remove prime farmland of the same quality as at T-1 (Garrison gravelly silt loam 0-7 percent slopes). Other construction-related impacts would be reduced, however, because it is further removed from the Pleasantview Road residential area. The construction activity would be less visible from Pleasantview Road residents, but would be more visible to persons driving on Interstate 90. Truck traffic moving to and from the construction zone would use only a small length of Pleasantview Road and would not have to pass through the one-lane railroad undercrossing. Frontage Road A would be the principal access. The construction-related safety hazard, and noise and dust impacts would therefore be relatively minor. Traffic moving to and from the Jacklin Seed processing complex to the west of Site T-1A would be subject to temporary truck traffic hazards and possibly occasional traffic delays.

Use of Site T-2 would have noise, dust and visual problems similar to Site T-1. Residents living just east of Chase Road and persons frequenting the commercial establishments south of the site would be affected by these short-term nuisances. Truck traffic and the visual disturbances would affect persons using Chase Road and Mullan Avenue, a main Post Falls thoroughfare. The 15 to 40 acres of land that would be converted to wastewater facilities is also prime farmland under the U. S. Soil Conservation Service definition (Garrison gravelly silt loam, 0-7 percent slopes).

Site T-3 is located within a rural residential neighborhood and would therefore create serious construction-period disruptions. Several dwellings would be removed and the residents displaced. Persons living in adjacent residences would suffer significant noise nuisances, traffic hazards and perhaps temporary access disruptions. The truck traffic hazards would exist on Spokane Road, Corbin Road and Frontage Road A. Construction at T-3 would create the most significant short-term disturbances of any proposed treatment plant site.

Treatment site T-4 occupies a patch of open land immediately adjacent to Post Falls Dam. While it is not immediately adjacent to residential or commercial areas, it is much too small an area to accommodate the proposed treatment facilities. Therefore, it is not a truly viable alternative and should not be given further detailed consideration as a treatment site.

Construction at Site T-5 would remove prime farmland just as at Sites T-1, T-2 and T-3, and would be highly visible from both Interstate 90 and U. S. Highway 10. Truck traffic to and from the site could use Highway 10 and therefore should not create a significant safety hazard. There are no large residential areas near Site T-5 that would be affected by the noise, dust or traffic associated with construction.

Alternative Site T-6 is the most isolated of the seven sites investigated by the project engineers. Construction at this location would therefore create the fewest short-term nuisance impacts (noise, dust, aesthetics) and would not present a significant safety hazard. Truck access to the site would be by U. S. Highway 10 and Beck Road. The added traffic on these roads would not pose a significant hazard. There are no residential or commercial land uses in the vicinity of Site T-6. In addition, the soils on this site do not qualify as prime farmland according to the U. S. Soil Conservation Service.

Spray Disposal Area Construction

Alternatives A and C would require installation of a sprinkler irrigation system on 380 acres of open land. Alternative A would also require construction of a 20-acre storage pond at this irrigation area. Le Pard and Frame investigated three possible sites for irrigation disposal. Site S-1, listed as the preferred site in the preliminary draft of the facilities plan, is located 2.5 miles west of Post Falls, just north of U. S. Highway 10 (Figure 1-2). Any site preparation, trenching or grading at this location should not create a significant nuisance or safety hazard, as the adjacent land uses are agricultural. The land is not prime farmland, so the storage pond construction would not remove a valuable soil resource.

Irrigation Sites S-2 and S-3 both occupy prime agricultural land (Garrison gravelly silt loam, 0-7 percent slopes), so storage pond construction would remove a significant soil resource. Site S-2 is just one mile west of downtown Post Falls and is adjacent to developing residential and commercial areas (Figure 1-2). Even though construction activity at the irrigation disposal site would be minimal, the nuisance and safety hazard impacts at S-2 would be greater than those at S-1. Scattered residences are located both east and west of S-2. In addition, East Greenacres East Ditch, which passes through S-2, is mapped as a Zone A (100-year floodplain) flood hazard area on the U. S. Federal Insurance Administration preliminary flood insurance rate map for Kootenai County (U. S. Department of Housing and Urban Development, Federal Insurance Administration 1980). Any facilities constructed in this zone would have to be designed to avoid damage from periodic flooding.

Site S-3 is about 2.5 miles southwest of downtown Post Falls on the north bank of the Spokane River. Construction at this site would temporarily affect residents living just east of Pleasantview Road. The noise and dust impacts would be relatively minor, but construction-related traffic on Pleasantview Road could present a safety hazard to both automobiles and pedestrians. This impact could be minimized if proper safety precautions were used by truck drivers and other construction personnel.

Pipeline Construction

A major part of the project-related construction activity would be spread throughout Post Falls by wastewater collector and interceptor installation. Figure 1-1 maps the proposed collection system. The major interceptors that would carry the consolidated wastewater flow to the treatment plant and disposal area are mapped in Figure 1-2. The construction of these lines would be required for each project alternative except "no-action" and would involve excavation, pipe-laying and covering operations. Truck traffic, heavy equipment operation, grading and repaving would occur along each new line. Nearly every resident in Post Falls would be affected in one way or another by the construction.

As with most pipe-laying operations, the impacts would be primarily short-term nuisances. Noise, dust, access disruption and traffic delays could be expected throughout the area. Most of the lines would follow existing roads or rights-of-way, but several would cut across presently undeveloped land (see Figure 1-1). There are several routes that warrant specific mention. The pipeline that crosses the Spokane River just upstream from Post Falls Dam should be hung from the bridge rather than placed on the bottom of the stream so that leaks could be readily detected and repaired, and the river environment would not have to be disturbed. The several lines that cross Interstate 90 should be bored under the road surface so that the construction operation does not create a significant traffic hazard. Finally, construction of the main interceptor that extends westward along Fourth Street and across Spokane Street would cross open land just north of Post Falls Dam. Archaeological site 10-KA-44 is near this pipeline route and should be located and protected from any defacement or damage during construction. A report prepared by the University of Idaho Laboratory of Anthropology states that this site appears eligible for nomination to the National Register of Historic Places (see Appendix A).

Section 106 of the National Historic Preservation Act requires the head of any federal agency with jurisdiction over a proposed federal or federally-assisted project to consider the impact of the project on sites, districts or structures included on or eligible for inclusion on the National Register of Historic Places prior to taking action on the project. The federal agency must also provide the Advisory Council on Historic Preservation the opportunity to review the cultural and historic implications of the proposed project prior to action.

Regulations implementing Section 106 identify the procedure for evaluating potential impacts on properties on or eligible for the National Register. This includes: 1) identifying properties within the project's area of impact that are on or eligible for inclusion on the National Register of Historic Places (this includes consulting the National Register and the State Historic Preservation Officer [SHPO]); 2) determining whether properties on or eligible for the National Register might be affected by the project; 3) determining if the effect is adverse; 4) notifying the Advisory Council and the SHPO of the findings of the impact analysis; and 5) proceeding with the consultation process if an adverse effect is anticipated.

Steps 1 and 2 of the above process have been completed. The Idaho SHPO has been consulted (see letter in Appendix A) and it has been determined that only Site 10-KA-44 could be possibly affected. A full determination of impact can only be made after the proposed interceptor routes are surveyed. It appears from preliminary route maps that an adverse impact can be avoided. A final determination will be made prior to completion of a Final EIS.

Outfall Construction

Two outfall locations have been identified by LePard and Frame. One is an interim site and one is expected to be permanent (see Figure 1-2). The interim site is immediately below Post Falls, while the permanent site is just downstream from Corbin Park near the end of Spokane Road. Placement of a pipeline and diffuser along the bottom of the river would undoubtedly create some short-term turbidity in the stream. Construction equipment might also pose a short-term hazard to boaters or rafters on the river. An effort should be made to disturb as little of the stream bank and bottom as possible during construction so that turbid conditions and downstream sedimentation are minimized. Bank restabilization and revegetation should be employed to reduce the chances of long-term erosion and sedimentation along the outfall routes.

Mitigation Measures

Most construction-related impacts, whether caused by treatment plant, storage pond or pipeline construction, could be readily reduced to acceptable levels by sensible operational techniques. Noise and dust suppression measures have become standard operational procedures in most areas. Working hours should be limited to the 7:00 a.m. to 5:00 p.m. period of weekdays; all graded and excavated surfaces should be periodically watered to reduce nuisance dust, and disturbed surfaces should be compacted and covered or revegetated to avoid subsequent wind or rain erosion. Truck traffic moving to and from construction zones should use extreme caution in residential or recreational areas. Open trenches and surface disturbances should be properly marked with warning signs. Heavy equipment and hazardous building materials should be stored in a fenced corporation yard after working hours to avoid creating a safety hazard.

In order to avoid the permanent loss of 15-40 acres of prime agricultural land due to treatment plant construction, it would be necessary to select treatment site T-3, T-4 or T-6. These sites, however, have other impacts associated with their use that must be considered when selecting a treatment plant location.

Surface Water Quality Implications

Existing Water Quality

Water quality in the Spokane River at the site of the proposed Post Falls wastewater treatment facility can be characterized as satisfactory (Table 2-1). The principal nutrient compounds of nitrogen and phosphorus are present in very low concentrations, while dissolved oxygen/percent saturation levels are optimal for maintenance of freshwater life.

Heavy metals exist in concentrations which occasionally exceed minimum recommended criteria. Zinc, originating predominantly from upstream mine tailings (Reid 1961), generally presents the most significant impairment to the continued productivity of sensitive aquatic life. Mean concentrations of zinc for both the November-April (N-A) and May-October (M-O) periods exceed the 0.05 mg/l safety criteria (U. S. EPA 1976) to an alarming degree (Table 2-1). The muscle tissues of certain Spokane River fish contain zinc concentrations three times greater than fish from unpolluted streams in the Coeur d'Alene drainage basin (Funk et al. 1975). Mean copper and lead concentrations in the river occasionally exceed the minimum recommended criteria of 0.01 mg/l and 0.05 mg/l, respectively (U. S. EPA 1976). Data from 1974-1979 (USGS 1974-1979) indicate that a few abnormally high monthly concentrations in 1977 are primarily responsible for the relatively high mean values.

Fecal coliform bacteria counts have exceeded the Idaho standard of 500/100 ml (not to be exceeded by any sample) for primary contact recreation on infrequent sampling dates (USGS 1975-1979). Although the mean concentration (Table 2-1) is well within the state's monthly geometric mean standard of 50/100 ml, Funk et al. (1975) maintain that fecal coliform counts are consistently the highest of any point on the river upstream from Spokane.

Impact of the Proposed Waste Treatment Facility on Existing Water Quality

Estimates of the waste discharge characteristics of the proposed facility were provided by LePard and Frame, Inc. (pers. comm.) (Table 2-2). Resultant concentration increases of selected parameters in the Spokane River (Tables 2-3 and 2-4) were calculated by dividing the combined effluent and background river load (USGS 1975-1979) by their respective total volumes. Concentration and load increases were tabulated seasonally because treatment Alternatives A and C do not discharge into the river during the M-O period, whereas Alternative B discharges year-round. Mean river flow and Q_{7-15} (7-day 15-year low flow) values (1965-1979) were used in the calculations to provide a comparison between potential average and worst case situations (Tables 2-3 through 2-6).

Table 2-1. Selected water quality parameters for the Spokane River near Post Falls, Idaho (mean monthly concentration in mg/l)*

PARAMETERS	NOVEMBER-APRIL		MAY-OCTOBER	
	MEAN	RANGE	MEAN	RANGE
Total Phosphorus	.020	0.0 - .060	.020	0.0 - .090
Ortho Phosphorus	.010	0.0 - .040	.010	0.0 - .030
Total Nitrogen	.280	.030- 2.30	.310	.05 - 1.50
Total Ammonia	.010	0.0 - .050	.010	0.0 - .040
Unionized Ammonia[1]	.003	0.0 - .014	.004	0.0 - .026
Nitrate + Nitrite	.040	0.0 - .110	.010	0.0 - .080
Cadmium	.008	0.0 - .011	.010	0.0 - .022
Lead	.087	0.0 - .100	.080	0.0 - .250
Zinc	.231	.120- .560	.154	.090- .675
Copper	.044	.004- .330	.039	0.0 - .280
Fecal Coliforms[2]	20.5	0-236	19.6	0-256
Biochemical Oxygen Demand	1.06	.20 - 1.80	1.14	0.5 - 1.90
Chlorine	---	---	---	---
Dissolved O_2/% saturation	12.4/106	10.3-13.9/91-116	9.8/104	7.7-13.3/91-125

1. Calculated from total ammonia concentration, pH, and temperature using conversion table in Willingham (1976).

2. Concentration /100 ml.

* USGS 1975-1979.

Table 2-2. Estimated Quality of Post Falls Wastewater Effluent Discharged to the Spokane River[1]

Parameter	Nov-Apr Alternatives A, B, C	May-Oct Alternative B
Total Phosphorus	12.0 mg/l	1.8 mg/l
Ortho Phosphorus	8.55 mg/l	.514 mg/l
Total Nitrogen	38.2 mg/l	33.7 mg/l
Total Ammonia	30.0 mg/l	5-15 mg/l[2]
Un-ionized Ammonia	.044 mg/l[3]	.0195 mg/l
Nitrate and Nitrite	2.0 mg/l	1.7 mg/l
Cadmium	.020 mg/l	.020 mg/l
Lead	.050 mg/l	.050 mg/l
Zinc	.232 mg/l	.232 mg/l
Copper	.054 mg/l	.054 mg/l
Fecal Coliforms	200/100 ml	200/100 ml
Biochemical Oxygen Demand	20-30 mg/l	20-30 mg/l
Chlorine	1.0 mg/l	1.0 mg/l

1. Source: LePard and Frame, Inc., pers. comm.
2. 15 mg/l for May and October, 5 mg/l for June through September.
3. Estimated by Jones & Stokes Associates, Inc., using temperature and pH data from LePard and Frame.

Table 2-3. Potential concentration increases (mg/l) under mean flow (1965-1979) conditions of selected water quality parameters in the Spokane River near Post Falls, Idaho.

Parameters	NOVEMBER-APRIL			MAY-OCTOBER		
	Existing Conditions Mean Flow[4] 7,202 cfs	With Alt. A, B or C Waste Discharge[5]	Percent Change	Existing Conditions Mean Flow[4] 6,250 cfs	With Alt. B Waste Discharge[1,5]	Percent Change
Total Phosphorus	.020	.026	30	.020	.021	5
Ortho Phosphorus	.010	.014	40	.010	.010	3
Total Nitrogen	.280	.300	7	.310	.330	6
Total Ammonia	.010	.025	150	.010	.015	50
Un-ionized Ammonia	.003	.003	trace	.004	.004	trace
Nitrate + Nitrite	.040	.041	3	.010	.011	10
Cadmium	.008	.008	trace	.010	.010	trace
Lead	.087	.087	trace	.080	.080	trace
Zinc	.231	.231	trace	.154	.154	trace
Copper	.044	.044	trace	.039	.039	trace
Fecal Coliforms[2]	20.5	20.6	trace	19.6	19.7	1
Biochemical Oxygen Demand	1.06	1.08	2	1.14	1.16	2
Chlorine	---	.0005	---	---	0.0[3]	---

1. Alternatives A and C have no summer discharge.

2. Concentration/100 ml.

3. Dechlorination with sulfur dioxide.

4. See Tables 2-1 and 2-2 for sources.

5. All waste discharges were considered to be 2.4 MGD.

Table 2-4. Potential concentration increases (mg/1) under Q_{7-15}[1] (1965-1979) flow conditions of selected water quality parameters in the Spokane River near Post Falls, Idaho.

	NOVEMBER-APRIL			MAY-OCTOBER		
Parameters	Existing Conditions Q_{7-15} Flow 1,414 cfs[5]	With Alt. A, B or C Waste Discharge[6]	Percent Change	Existing Conditions Q_{7-15} Flow 113 cfs[5]	With Alt. B Waste Discharge[2,6]	Percent Change
Total Phosphorus	.020	.051	155	.020	.080	300
Ortho Phosphorus	.010	.030	200	.010	.026	267
Total Nitrogen	.280	.380	36	.310	1.417	357
Total Ammonia	.010	.089	790	.010	.284	284
Un-ionized Ammonia	.003	.003	4	.004	.004	20
Nitrate + Nitrite	.040	.045	13	.010	.066	560
Cadmium	.008	.008	trace	.010	.011	10
Lead	.087	.087	trace	.080	.082	3
Zinc	.231	.232	trace	.154	.163	6
Copper	.044	.044	trace	.039	.041	5
Fecal Coliforms[3]	20.5	21.0	2	19.6	26.1	33
Biochemical Oxygen Demand	1.06	1.14	8	1.14	2.12	86
Chlorine	---	.0026	---	---	(4)	---

1. Q_{7-15} refers to the lowest 7-day average flow condition recorded in the river over a 15-year period of record.

2. Alternatives A and C have no summer discharge.

3. Concentration/100 ml.

4. Dechlorination with sulfur dioxide.

5. See Tables 2-1 and 2-2 for sources.

6. All waste discharges were considered to be 2.4 MGD.

Table 2-5. Potential load increases (lbs/day) under mean flow (1965-1979) conditions of selected water quality parameters in the Spokane River near Post Falls, Idaho

	November-April			May-October		
Parameters	Existing Conditions Mean Flow 7,202 cfs	With Alt. A, B or C Waste Discharge[4]	Percent Change	Existing Conditions Mean Flow 6,250 cfs	With Alt. B Waste Discharge[1,4]	Percent Change
Total Phosphorus	776	1,016	31	674	710	5
Ortho Phosphorus	388	559	44	337	347	3
Total Nitrogen	10,869	11,634	7	10,443	11,118	6
Total Ammonia	388	988	155	337	504	50
Un-ionized Ammonia	116	117	1	135	136	1
Nitrate + Nitrite	1,553	1,593	3	337	371	10
Cadmium	310	311	trace	336	337	trace
Lead	3,377	3,378	trace	2,695	2,696	trace
Zinc	8,967	8,972	trace	5,188	5,193	trace
Copper	1,708	1,709	trace	1,314	1,315	trace
Fecal Coliforms[2]	---	---	---	---	---	---
Biochemical Oxygen Demand	41,148	41,748	1	38,404	39,004	2
Chlorine	---	20	---	---	(3)	---

1. Alternatives A and C have no summer discharge.

2. Concentration /100 ml.

3. Dechlorination with sulfur dioxide.

Loading in lbs/day = concentration (mg/l) x flow (cfs) x 5.39
e.g., 10,869 lbs/day = 0.280 mg/l x 7,202 x 5.39

4. All waste discharges were considered to be 2.4 MGD.

Table 2-6. Potential load increases (lbs/day) under Q_{7-15} (1965-1979) flow conditions of selected water quality parameters in the Spokane River near Post Falls, Idaho

Parameters	November-April Existing Conditions Q_{7-15} Flow 1,414 cfs	With Alt. A, B or C Waste Discharge[4]	Percent Change	May-October Existing Conditions Q_{7-15} Flow 113 cfs	With Alt. B Waste Discharge[1,4]	Percent Change
Total Phosphorus	152	392	158	12	48	300
Ortho Phosphorus	76	247	225	6	16	267
Total Nitrogen	2,134	2,899	36	189	863	357
Total Ammonia	76	676	789	6	173	278
Un-ionized Ammonia	23	24	4	2	2.4	20
Nitrate + Nitrite	305	345	13	6	40	567
Cadmium	60	61	2	6	6	7
Lead	663	664	trace	49	50	2
Zinc	1,761	1,766	trace	94	99	5
Copper	335	336	trace	24	25	4
Fecal Coliforms[2]	---	---	---	---	---	---
Biochemical Oxygen Demand	8,079	8,679	7	694	1,294	86
Chlorine	---	20	---	---	--- (3)	---

1. Alternatives A and C have no summer discharge.

2. Concentration/100 ml.

3. Dechlorination with sulfur dioxide.

4. All waste discharges considered to be 2.4 MGD.

Nutrients. The eutrophication (nutrient enrichment) of the river and the ensuing increase in primary production is primarily due to two elements, nitrogen and phosphorus, providing trace elements are not limiting to growth. A number of proposals are made in the literature concerning the importance of nitrogen and phosphorus, and reported concentrations are used for establishing critical concentrations and maximum permissible loads to prevent nuisance algal growth. These critical values, however, cannot be applied without qualification, because the complex trophic conditions that exist in each case are determined by hydrological, morphometric, optical, and climatic factors, other important nutrients, and other factors (Vollenweider 1968). The effects of these factors are not fully understood and cannot as yet be reduced to a quantitative formula which is sufficiently meaningful to precisely describe the majority of cases in a comprehensive manner. However, the use of established nutrient concentration and load standards, if kept in perspective, is the best tool presently available for providing a reasonable estimate of the effects of nutrient increases (Wetzel 1975). The Washington Department of Ecology is presently preparing nutrient load allocation estimates for the river.

Phosphorus Increase. In the majority of freshwater systems phosphorus is much less abundant than nitrogen, existing in both organic and inorganic, soluble and insoluble forms (Hynes 1970). The inorganic, soluble phosphorus compound (PO_4-orthophosphate) is the most important for plant nutrition. However, the organic form is readily converted to orthophosphate via bacterial degradation pathways; hence, both parameters are important in predicting nuisance algal growth (Wetzel 1975).

Algal species present in the Spokane River below Post Falls consist primarily of diatoms (*Tabellaria* sp., *Synedra* sp., *Melosira* sp.) during the fall, winter, and spring months; a carpet of filamentous green algae (*Ulothrix* sp. and *Cladophora* sp.) exists throughout the summer (Funk et al. 1975). Primary productivity at Post Falls is the highest on the river upstream of Spokane, ostensibly due to a combination of factors: nutrient releases from Lake Coeur d'Alene, the upstream waste treatment plant, and the impoundment above Post Falls (Funk et al. 1975).

Algal growth potential in the river due to increased nutrient loads from the proposed wastewater treatment plant (WWTP) depends primarily on whether existing species are phosphorus and/or nitrogen limited and the extent of the increase. The low inorganic nitrogen to orthophosphate ratio (5:1 N-A, 2:1 M-O) combined with observations by Soltero et al. (1975) indicate that nitrogen is the predominate factor limiting algal growth. An increase in nitrogen would stimulate growth until a ratio of about 10:1 is reached; thereafter, the phosphorus input would further stimulate growth. An increase in phosphorus coincident with the nitrogen increase would undoubtedly stimulate benthic primary productivity below the treatment plant outfall to the point where phosphorus becomes the limiting nutrient.

Ortho/total phosphorus concentrations and load increases at mean summer flow periods would not exceed 5 percent of total background levels (Tables 2-3 and 2-5) if Alternative B (phosphorus removal) is adopted. The estimated concentration in the river would be considerably below the 0.1 mg/l level suggested to prevent development of nuisance algal growth in receiving water (U. S. EPA 1976). Many studies (Maloney et al. 1956; Soltero et al. 1975) indicate a highly significant correlation between phosphorus concentrations and algal productivity. The increase in phosphorus to the river would thus, presumably result in a slight increase in algal growth in the river.

Phosphorus uptake velocity by microphytes is a function of both internal cell concentration and external water concentration, indicating that any additional phosphorus discharged in a phosphorus-limited system would be quickly removed to background river concentrations. Mackenthun et al. (1960) found that soluble phosphorus concentrations decreased 27 percent 4 miles downstream from a waste treatment plant discharge and a 36 percent reduction occurred 12 miles downstream. Eventually a portion of the additional phosphorus taken up by algae will be recycled and flushed downstream while some will permanently leave the system via algal grazing invertebrates and fish (Wetzel 1975).

These results indicate that the amount of phosphorus originating from the WWTP and reaching Long Lake, 40 miles downstream, may be a small fraction of the total load entering the lake. Nuisance algal blooms and increased eutrophication of Long Lake (Soltero et al. 1975), however, make imperative the need to reduce phosphorus loading to the Spokane River. Studies are currently in progress which hopefully will clearly identify maximum permissible upstream nutrient loading and its effect on Long Lake and also the most cost-effective way to reduce the load on Long Lake. This study is being conducted under the guidance of the Washington Department of Ecology and is expected to aid EPA and state decisions on wastewater treatment needs. If it is found that the Spokane River is at or near its maximum acceptable phosphorus loading, wastewater discharge phosphorus limitations could be quite restrictive in both Idaho and Washington.

Nitrogen Increase. The inorganic compounds ammonia, nitrate, and nitrite are the most biologically significant of the nitrogenous effluent components (Hynes 1970). Nitrate is generally recognized as the most available form of inorganic nitrogen for algal production (Wetzel 1975) although Flagg and Reid (1954) stated that at concentrations up to 15 mg/l there was no significant difference in the utilization of the three inorganic nitrogen forms by stream algae.

Nitrite-nitrate and ammonia concentrations and loads show significant summer increases under mean flow and Q_{7-15} conditions (Tables 2-3 to 2-6). The high percentage increases reflect the initial low background concentrations in the Spokane River below Post Falls. The resulting combined concentration values are substantially less than suggested threshold levels for prevention of injurious algal growth (0.3 mg/l-nitrate-N, 2.6 mg/l-total ammonia-N, 0.6 mg/l-total nitrogen; Muller 1953; Mackenthun and Ingram 1967). Pacific Environmental Laboratory (1978), using AGP tests, found no algal growth test response to inorganic nitrogen at levels below 0.3 mg/l in the Truckee River, Nevada, a value rarely exceeded even during extreme low flow periods in the Spokane River (Tables 2-1 and 2-4).

The ultimate effect of increased nitrogen loads on indigenous algal species is primarily determined by whether the existing low background nitrogen levels are limiting growth. Even though the phosphorus to nitrogen ratio is extremely low in the Spokane River, Lider et al. (1980) found that this phenomenon in the Truckee River did not preclude nitrogen from being a limiting nutrient. Consequently, even though the nutrient load from the WWTP is small, a substantial increase in primary productivity below the outfall is likely.

Inorganic nitrogen, like phosphorus, is rapidly taken up by aquatic microphytes. Mackenthun et al. (1960) found that inorganic nitrogen concentrations decreased 16 percent 4 miles below an effluent discharge site and a 36 percent reduction occurred 12 miles downstream. Thus, the concentration increases resulting from the Post Falls WWTP would most likely be reduced to nearly present concentrations within a relatively short distance downstream. This additional nitrogen will be continuously stored and released in a spiraling process downstream, eventually entering Long Lake. Groundwater recharge may reduce some of the phosphorus load. The increased amount actually entering Long Lake is expected to be small when compared to the total load, although this conclusion is very speculative. Additional research is required.

Summary and Conclusions. An important question is how much additional enrichment of the river is acceptable, because any increase in nutrients will support additional biological production. Nutrient increases during the M-O period when nuisance algal growth potential is highest would be relatively small, with the resulting river concentrations and loads well within acceptable threshold limits. Thus, the primary effect of implementing Alternative B would be an increased "fertilization" of existing algae below the treatment plant outfall resulting in an increase in primary production. This increase should not deleteriously affect river conditions but provide additional food and habitat for the many stream invertebrates inhabiting the river (Funk et al. 1975), thus providing additional food for existing fish.

The long-term effects downstream on Long Lake are uncertain. A high percentage of the additional nutrients will be taken up by stream algae within a few miles downstream, gradually being recycled downstream or permanently lost. The nutrient load increase associated with Alternative B will contribute to the nutrient load entering Long Lake during the growing season. Alternatives A and C both provide for no river discharge during the M-O period and consequently would have less effect on Long Lake or the Spokane River.

It is the long-term influences of wastewater discharges above Long Lake that are being considered in the Washington Department of Ecology waste load allocation study now in progress. This study is designed to help decide how much phosphorus must be removed from upstream treatment plant discharges to maintain water quality in Long Lake. Until that study is completed, EPA feels it is necessary to continue to plan for phosphorus removal.

Heavy Metals. It is assumed that concentrations of zinc and copper in the river often exceed typical threshold levels for toxic effect. Some increase in tolerance has probably occurred through adaptation or acclimation, but this phenomenon is undefined. Therefore, any significant increase in the concentration of heavy metals may have an adverse impact on existing fish and invertebrate populations. Aquatic microphytes (primarily diatoms) may also be selectively affected. During the summer months when primary production is the highest (Funk et al. 1975), mean flow concentration increases of any metal in the effluent do not exceed 1 percent and never more than 10 percent during the extreme low flow period (Tables 2-3 and 2-4). These low level additions to the background river load, combined with the observation of Green et al. (1975) that indigenous algae in the Spokane River basin have adapted to high metal concentrations, warrant the conclusion that heavy metals from the waste treatment facility will have a negligible adverse effect on microphytic growth.

Impact of Proposed First Phase Project

As discussed at the end of Chapter 1, LePard and Frame has recently proposed a phased implementation of wastewater facilities for Post Falls. The first phase proposes an interim 1 MGD discharge 1.7 miles upstream from the proposed Alternatives A, B, and C outfall site and 1.3 miles upstream from Corbin Park. This interim facility would operate for 3 years, after which either Alternatives A or B would be implemented and the outfall moved downstream. Because the effluent volume of this phase would be less than that used to assess the three full alternative projects (2.4 MGD), no seasonal phosphorus removal is planned in this first phase.

Phosphorus Increase. Under mean flow conditions, total phosphorus concentrations in the river immediately downstream from the outfall site would increase from 0.020 mg/l to 0.023 mg/l (15 percent) during both the November-April and May-October periods. Total phosphorus loading to the river would be approximately 100 pounds per day. This increase is less than that projected for Alternatives A, B, and C during the November-April period, principally because of the smaller effluent volume. During the May-October period, however, when algal growth potential is greatest, river concentrations and loading would be 10 percent higher than with Alternative B and 15 percent higher than with Alternatives A and C, which do not discharge during this period.

Under Q_{7-15} flow conditions, river concentrations would increase from 0.020-0.033 mg/l (65 percent) during the November-April period and from 0.020-0.182 mg/l (810 percent) during the May-October period. Increases would be 510 percent higher than Alternative B during the May-October period.

Orthophosphorus concentrations in the river immediately downstream from the proposed outfall site would increase 20 percent (0.010-0.012 mg/l) throughout the year under mean flow conditions. This increase is 20 percent less than Alternatives A, B, and C during the November-April period (Table 2-3), but 17 percent higher than Alternative B during the more critical May-October period. Additional loading to the river would be 71 pounds per day.

Under Q_{7-15} flow conditions, river concentrations would increase from 0.010 mg/l to 0.019 mg/l (90 percent) during the November-April period and from 0.010 mg/l to 0.126 mg/l (1,160 percent) during the May-October period. Orthophosphorus concentrations and loading would be 893 percent higher than Alternative B (Table 2-6).

The primary impact on the river during the May-October period would be a proportionate increase in algal growth immediately downstream from the outfall site. Relatively faster current velocities at the Phase I discharge site due to the proximity to the falls could actually inhibit production of aquatic macrophytes. Fish production would not be significantly impaired, but could actually be enhanced by increased benthic invertebrate populations due to additional algal growth. In comparison to the fully-developed alternatives, placement of the outfall 1 mile upstream would alter the site of localized effects. However, no other significant impacts on river water quality would ensue as no major changes in river morphology exist between the Phase I interim discharge site and the eventual discharge site.

The effect on Long Lake approximately 42 miles downstream, would depend primarily on whether the additional phosphorus load is exerted prior to entering the lake. Long Lake is currently in a state of delicate balance and any increases in phosphorus loading to the river may have significant adverse impacts on existing water quality (Soltero pers. comm.). Whether the additional phosphorus loading under this phase during the May-October period is acceptable will ultimately be determined by the Washington Department of Ecology waste load allocation study which will establish maximum permissible loading on a per day basis.

Metals, Toxins, and Additional Nutrients. Effluent quality would be similar to Alternatives A, B, and C (Table 2-2), but effluent volume would be reduced. This 58 percent reduction in volume would proportionally decrease any adverse localized effects mentioned previously.

Impact of Water Quality Changes on the Existing Fishery

Published reports indicate a diverse mix of fish species exist in the Spokane River including Kokanee salmon, brook trout, cutthroat trout, rainbow trout, largemouth bass, pumpkinseed, yellow perch, black crappie, black bullhead, squawfish, and various sucker species (Funk et al. 1975; U. S. Army Corps of Engineers 1976; Mitchell pers. comm.). The continued existence of a viable sports fishery is dependent on the maintenance of good water quality by treating wastewater effluents to levels consistent with the needs of fish and other beneficial uses. Effluent components that present a direct risk to the fish species include: 1) heavy metals - zinc and copper, 2) un-ionized ammonia, and 3) residual chlorine.

Heavy Metals

Toxic effects of metals are generally most severe in the early life history stages, e.g., egg hatching and fry survival (U. S. EPA 1976). Recent studies (Funk pers. comm.) indicate that optimal nesting habitat exists for indigenous species downstream from Post Falls. Even moderate concentration increases in the relatively soft water of the Spokane River (16-23 mg/l $CaCO_3$) can alter both young and adult physiology and behavior to the extent of reducing viability and, ultimately, population size.

Background cadmium concentrations are very low (Table 2-1), well below the minimum recommended criteria of 0.1 mg/l suggested for maintenance of freshwater life (U. S. EPA 1976). The minimal increases due to the WWTP present no potential hazard to fish (Tables 2-3 and 2-4). Although mean lead and copper concentrations exceed the 0.05 mg/l and 0.01 mg/l criteria, respectively, most monthly values over the 5-year monitoring period (1975-1979) were well within acceptable limits with only a few unexplained high values in 1977 creating the high mean figure. A number of studies (Soltero 1976; Funk et al. 1975) support the assessment that concentration increases due to the WWTP would be negligible even at Q_{7-15} flows (Tables 2-3 and 2-4), indicating that no additional deleterious effects would ensue beyond existing conditions.

Mean zinc concentrations in the affected area are very high, well in excess of the 0.1 mg/l minimum safety criteria (U. S. EPA 1976). Acute toxicity levels (96 TLM) for the coldwater fish species (cutthroat, rainbow and brook trout [Holcombe and Benoit n.d.]) are already exceeded by background levels indicating that populations of fish in the river have probably developed a tolerance to high zinc levels (Funk et al. 1975). The proposed additional input to the river will increase concentrations by less than 1 percent under mean flow conditions throughout the year, which suggests that fish survival would not be diminished beyond present levels. However, early life history stages developing immediately downstream from the sewage outfall may incur increased mortality with any additional zinc input.

Ammonia

The un-ionized form of ammonia (NH_3) is generally recognized as the molecule toxic to fish. It exists in equilibrium with ionized ammonia (NH_4), which is thought to have little adverse physiological effects on aquatic life (Willingham 1976). Because of the equilibrium relationship between NH_3 and NH_4, the toxicity of ammonia is very much dependent on pH, temperature, dissolved oxygen, and total dissolved solids as well as the concentration of total ammonia (Willingham 1976).

Background un-ionized ammonia concentrations range from 0.0-0.26 mg/l with a mean of 0.003 mg/l for the N-A period and 0.004 mg/l for the M-O period (Table 2-1). This is well below the 0.02 mg/l recommended criteria suggested for the maintenance of coldwater fish populations (U. S. EPA 1976).

Expected concentration increases due to the WWTP, as well as the addition of other abiotic factors affecting un-ionized ammonia toxicity, will not significantly raise current river concentrations, even during low flow periods.

Chlorine

Chlorine concentrations at Post Falls were assumed to be nondetectable because: 1) chlorine is not a natural constituent of rivers; 2) the only major source would be the Coeur d'Alene WWTP, many miles upstream; and 3) chlorine undergoes numerous chemical reactions in the river converting it to other forms (U. S. EPA 1976).

Assuming that background levels are negligible, resultant increases are expected to be well below the 0.002-0.005 mg/l safety range proposed by the EPA (1976) for protection of the most sensitive freshwater fish (Tables 2-3 and 2-4). Potential hazards do exist if the proposed 1.0 mg/l discharge is not effectively diffused into the receiving water. Any fish encountering a minimally-diluted pulse of chlorine would suffer immediate harmful effects. A multiple outlet diffuser meeting Idaho state standards for chlorine discharge is proposed in the WWTP design (Kimball pers. comm.), and should be sufficient to mitigate prospective dangers even during extreme low flow conditions. Proposed dechlorination with sulfur dioxide during the low flow summer months (Alternative B) and the high dilution ratio in the N-A period (Alternatives A, B and C) should effectively mitigate any significant adverse effects on fish.

Biochemical Oxygen Demand (BOD)

BOD represents the measure of the quantity of dissolved oxygen necessary for decomposition of organic matter by microorganisms such as bacteria. Resultant concentration increases produced by the WWTP are minimal during both seasonal periods, easily within established safety guidelines (Mackenthun and Ingram 1967). Thus, significant oxygen depletion which would adversely affect fish is unlikely, as background dissolved oxygen per percent saturation is optimal for freshwater life (Table 2-1) (U. S. EPA 1976), and major flow reductions below Post Falls (which decrease oxygen concentrations) are nonexistent.

Summary and Conclusions

Waste constituent concentration increases due to the proposed Post Falls waste treatment facility generally would be small, primarily due to the relatively small effluent volume of the facility (2.4 MGD) and the high mean discharge of the Spokane River. In addition, the proposed multiport diffuser will facilitate mixing below the point of effluent discharge, thus mitigating any adverse impact on fish immediately downstream. Summer effluent discharge (Alternative B) would create no significant additional hazard to existing fish under mean flow conditions, with only minimal adverse impacts during flows approaching the Q_{7-15} value. Fish species potentially affected during this period include the trout, which are generally recognized as less tolerant of heavy metals, chlorine, and un-ionized ammonia. Those species whose diet consists mainly of benthic invertebrates, where heavy metals are highly concentrated (Funk et al. 1975), also may be harmed. Alternatives A and C provide for no discharge into the Spokane River during the May-October period and consequently would present no significant additional adverse effects on existing fish species.

Impact on Uses of the Spokane River

Introduction

The Spokane River and adjacent lands from Post Falls to the Idaho-Washington state line are a recreational and economic resource for local residents and visitors to the area. Some of the more common water and shoreline activities and potential impacts of the wastewater system alternatives are discussed below. Figure 2-1 plots the seasonality of various beneficial river uses in comparison to the expected fluctuations in Post Falls wastewater discharges.

Water Contact Recreation

Swimming. Below Post Falls, Corbin Park is a favorite area for local and out-of-state swimming enthusiasts. Approximately 12-25 people use the park facilities during a summer

RIVER USES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SWIMMING, SKIING					– – –	——	——	——	– – –			
RAFTING, KAYAKING	– – –	– – –	——	——	——	——	——	——	– – –	– – –	– – –	– – –
SCUBA DIVING	– – –	– – –	– – –	– – –	——	——	——	——	——	– – –	– – –	– – –
BOATING			– – –	– – –	——	——	——	——	– – –	– – –	– – –	
FISHING	– – –	– – –	– – –	——	——	——	——	– – –	– – –	– – –	– – –	– – –
HUNTING										——	——	——
CAMPING, PICNICKING				– – –	– – –	——	——	——	– – –	– – –		
BIRD WATCHING	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –
LOG TRANSPORT	– – –	– – –	– – –	– – –	– – –	——	——	——	——	– – –	– – –	– – –
IRRIGATION					——	——	——	——	——			
POWER GENERATION	——	——	——	——	——	——	——	——	——	——	——	——
WATER SUPPLY	——	——	——	——	——	——	——	——	——	——	——	——

-LEGEND- – – INDICATES INTERMITTENT USE —— INDICATES FREQUENT USE

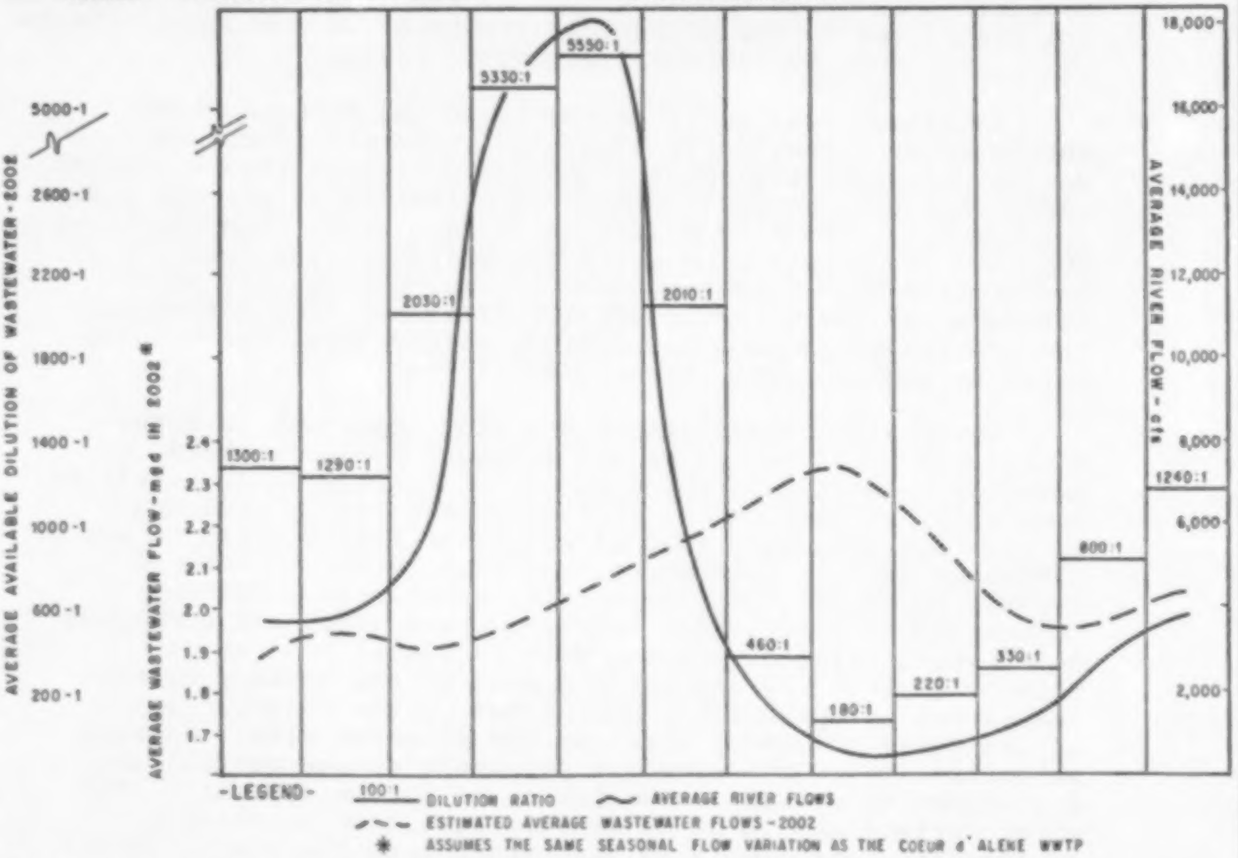


FIGURE 2-1. RELATIONSHIP BETWEEN SPOKANE RIVER BENEFICIAL USES & AVERAGE AVAILABLE DILUTION OF WASTEWATER DISCHARGES TO THE RIVER

weekend (June, July and August) when water and air temperatures are warmest (Eachon pers. comm). Kootenai County plans to upgrade the park sanitary and picnic facilities in the immediate future, which may attract even more visitors.

The permanent outfall site for the proposed treatment plant at Post Falls is about 0.5 mile downstream from Corbin Park. Summer river discharge (Alternative B) would have no apparent inhibitory effect on swimming activity at this location. However, a popular swimming locale, accessible via Pleasantview Road, does exist downstream from the proposed outfall site. The Alternative B wastewater discharge would increase the potential health hazard along this stretch of the river.

The area of primary concern, from a public health perspective, is the release of sufficient amounts of contaminated water to increase the risk of transmitting infectious agents to swimmers. The generally accepted parameter indicative of the degree of health risk is the level of fecal coliform bacteria present in the water (U. S. EPA 1976). These organisms are restricted to the intestinal tracts of warm blooded animals where many enteric microbial pathogens reside.

Existing fecal coliform counts in the Spokane River were discussed previously (Table 2-1); summer increases due to the waste treatment plant would be less than 1 percent under mean flow conditions but approximately 33 percent under extreme Q_{7-15} conditions (Tables 2-3 and 2-4). The resultant average concentration is still considerably less than the restrictive Idaho standard (not to exceed a monthly geometric mean of 50/100 ml or 500/100 ml on any single sample). The EPA (1976) recommended minimum safety level for bathing water is substantially higher (200/100 ml).

Aesthetic considerations are also important in determining the total impact of the proposed waste discharge on swimming as well as boating and other recreational activities. Generally, surface waters will be aesthetically pleasing if they are virtually free of materials attributable to waste discharge such as substances that will settle to form unsightly deposits, floating debris, substances producing objectionable color, odor, taste or turbidity, and compounds stimulating nuisance plant growth (National Academy of Science 1972). The aesthetic appeal of the Spokane River should not be appreciably diminished by the construction of the waste treatment plant at the proposed site. Current velocities below the proposed permanent sewage outfall are sufficient to prevent accumulation of bottom deposits. The water surface should be relatively free from detritus as no floating debris will be discharged into the river. Under mean summer flow conditions, Alternative B would increase suspended solids less than 1 percent from 7.50-7.52 mg/l, while under Q_{7-15} flow conditions the estimated increase will be from 7.50-8.48 mg/l (13 percent). These resultant concentration increases should not produce any color, odor or taste problems. As discussed previously, increased algal growth due to additional nutrient input should in no way reach nuisance proportions.

Canoeing, Kayaking, and Rafting. Members of the Whitewater Northwest Kayak Club run canoes and kayaks from March through August both above and below Post Falls Dam (Mossman pers. comm.). A favorite run of some of the approximately 40 members begins around Post Falls and ends 2 miles west of the state line.

The Spokane Canoe Club holds a yearly summer outing during which about 100 members float the Spokane River below Post Falls Dam (O'Hallaran pers. comm.). Individual members use this stretch year-round but mostly during summer. Rafting races have been sponsored in the past which began around Corbin Park and continued into Washington (Morris pers. comm.).

Most of the canoeing and kayaking buffs are aware of occasional wastewater bypasses from the Coeur d'Alene WWTP during storms but are not particularly concerned (Morris pers. comm.). Thus, no additional anxiety over water quality should result if Alternative B, with a summer waste discharge, is adopted.

Scuba Diving. The enrollment of approximately 150 students per year in the Coeur d'Alene scuba school is evidence of considerable local interest in the sport. Usually half of these students remain active in diving (Lee pers. comm.). For those with the proper gear, diving continues throughout the year, but most diving is concentrated between May and October.

Visibility in the river below the proposed waste discharge site is characterized as excellent during the summer months (mean turbidity - 2.5 JTU) (Clegg pers. comm.). The relatively small volume of effluent to be discharged should not reduce the clarity of the river to a point of deterring scuba diving activity.

On-Water Recreation

Boating. Most of the pleasure boating on the Spokane River occurs in the slower water above Post Falls Dam from May through August (Clegg pers. comm.). Boating below the dam is confined more to drift fishing. Increased nutrient inputs would not encourage plant growth in sufficient amounts to restrict the boating area.

Fishing. Year-round fishing for largemouth bass, yellow perch, black crappie, and pumpkinseed is enjoyed in the Spokane River (Goodnight pers. comm.). These species, however, represent a minor fishery compared to angler effort devoted to cutthroat trout during May and June and to Kokanee salmon from April to July. Most angler-days are spent above Post Falls Dam, but the McGuire access area, Corbin Park and Pleasantview Bridge are popular access points below the dam.

As discussed previously, existing fish species should not be adversely affected by the discharge proposals. The increased algal growth and warmer-than-ambient temperature of the effluent may even attract fish around the outfall site. Fishermen may consider the congregating fish in an area with good public access a beneficial impact.

Hunting. Duck hunting season in the Post Falls area extends from the first week in October to the end of December. A few local hunters may stalk mallards below Post Falls Dam late in the season (Miller pers. comm.). Effluent discharge below the dam should not affect this limited hunting activity.

Shoreline Activities

Camping and Picknicking. Although no overnight camping is allowed at Corbin Park, the barbecue and picnic facilities are used by as many as 25 people each summer weekend (June and July) and about 10 people per weekend during the remaining months (Eachon pers. comm.). The park is the principal public access point below Post Falls Dam. No reduction in camping activity is envisioned from resultant water quality changes created by the proposed Post Falls wastewater discharge.

Bird Watching. The Spokane Chapter of the National Audubon Society surveys the Post Falls area each year. Eagle censuses have been conducted from Coeur d'Alene Lake to the stateline as part of a national count (Sturts pers. comm.). None of the proposed WWTP alternatives would impact this use of the river shoreline.

Economic Uses

The more important economic uses of the Spokane River, resort and restaurant operation and electrical power generation all occur upstream from the proposed WWTP outfall site. River front property is the most valuable commodity below the Post Falls Dam. Residential development is currently being planned immediately downstream from the site of the proposed waste discharge. In order for property values along the river to be affected, a major decline in the aesthetic quality of the river (clarity, odor, etc.), would probably be necessary. These changes are not expected with the treatment level to be provided by the Post Falls plant.

Agricultural Uses

The Jacklin Seed Company diverts water just above stateline from mid-May to the first of July to irrigate about 200 acres along the south side of the Spokane River (Beck pers. comm.). Minor nutrient addition from the proposed WWTP should not affect this use.

Groundwater Recharge

The Spokane River recharges the Spokane Valley-Rathdrum Prairie aquifer between Post Falls and Greenacres, Washington at a rate of about 80 cfs on the average (Drost & Seitz 1978). Both the aquifer and the river provide domestic water supply for residents of Idaho and Washington. Even though the recharge rate is relatively small, any contamination of the river created by the proposed wastewater discharge would be of concern. This topic is discussed in detail in the Public Health Implications section of this chapter.

Impact of Proposed Project Phasing

The above impacts relate to the proposed permanent waste discharge site below Corbin Park. The facilities planners have recently proposed a phased development of Alternative A that would involve an interim, year-round waste discharge to the river 1.3 miles upstream from Corbin Park (Figure 1-2). This discharge would be less than 1 MGD and would be present for only about 3 years. The effluent quality would meet Idaho state water quality standards for water-contact recreation.

This proposed interim waste discharge should not cause water quality to deteriorate beyond state standards designed to protect the existing river uses unless treatment plant malfunctions occur. The likelihood of malfunctions cannot be calculated, but if inadequately treated wastewater is discharged from the interim outfall site, the impacts would be more significant than if the discharge occurred from the proposed permanent outfall site. This is because the interim discharge is upstream from developed riverfront property, and from Corbin Park. It is not known how many of the riverfront homes below the interim outfall are supplied domestic water from the river. The Panhandle Health District (1977a) reported 10 residences between Post Falls Dam and the stateline rely on the river for water supply. Inadequately treated wastewater discharged from the interim site during the summer would pose a health threat to swimmers at Corbin Park.

Summary and Conclusions

The proposed summer wastewater discharges of Phase I of Alternative A or the fully implemented Alternative B should have a minimal impact on the current recreational uses of the Spokane River. This assumes that the treatment system is properly operated, the effluent quality is kept within state mandated limits, and the effluent is thoroughly disinfected. Discharge of inadequately treated effluent from the proposed interim discharge point in the summer months would affect use of the major river access point (Corbin Park) between Post Falls and the stateline. Alternatives A and C, using land disposal during the May-October period, would have no effect on major recreational activities.

Although water quality changes downstream from the sewage outfall will rarely be perceivable, the psychological impact of constructing a waste treatment facility on the river below Post Falls is unmeasurable. Local opposition from downstream riverfront homeowners, boating enthusiasts, and upstream park users will undoubtedly appear in varying degrees regardless of which WWTP alternative is chosen. Consequently, the unknown magnitude of unfavorable reaction by the surrounding community will be an integral factor in determining the total impact of the proposed waste discharge.

Potential for Public Health Threats in Surface Waters

All of the Post Falls alternatives (except no action) include discharge of treated effluent to the Spokane River. This discharge must meet specific water quality standards established by the IDHW, including limitations on biological agents (fecal coliform) and a variety of chemical agents (metals, nitrates, asbestos, herbicides, pesticides). These standards have been established to protect the public health and ensure that designated uses of the river can continue.

The wastewater disinfection planned by Post Falls will reduce fecal coliform levels to 200 MPN per 100 ml, which, when dispersed in the river, should meet the primary contact recreation standard established by the State of Idaho. For Alternative B, this discharge would occur year-round. For Alternatives A and C, it would occur only from October 15 to April 15. Assuming that the outfall to the river is designed to achieve thorough mixing, a minimum of about 380:1 dilution will be available for Alternatives A and C discharges. Complete mixing cannot be expected, but this gives an indication of the relative volumes of the wastewater discharge and a low winter period river flow. This dilution was estimated assuming a wastewater discharge of 2.4 MGD and a low river flow of 1,414 cfs. (2.4 MGD is the expected year 2002 average dry weather flow [ADWF] of the plant and 1,414 cfs is the lowest 7-day flow average recorded in the winter months below Post Falls over the past 15 years of record [Q_{7-15} for 1965-1979]). Minimum available dilution for the Alternative B discharge would be about 30:1 based on a similar waste discharge and a dry season low flow (Q_{7-15}) of 113 cfs in the river. Background fecal coliform levels as recorded at USGS gaging station 12149000 just below Post Falls Dam, range from less than 1 MPN/100 ml to over 800 MPN/100 ml. Table 2-6 lists coliform measurements for water years 1975-1976 and 1976-1977.

As mentioned in the beneficial uses discussion of this chapter, the Spokane River below the proposed outfall is used for a variety of contact and noncontact recreation. This occurs primarily in the summer months (see Figure 2-1), but some contact recreational uses extend into the colder months (kayaking, scuba diving). The river is also used to a limited extent for drinking water supply by persons living immediately along the river. According to a survey conducted by the Panhandle Health District, 10 dwellings are drawing utility and/or domestic water from the river. Domestic water supply is a designated beneficial use of this stretch of the river. The Spokane River below Post Falls also recharges the Rathdrum Prairie aquifer (80 cfs average). Several of the City of Spokane's major domestic water supply wells draw aquifer water immediately adjacent to the Spokane River (Well Electric and Baxter Wells).

The proposed wastewater discharge under Alternatives A and C does not appear to pose a major threat to the health of recreational users. LePard and Frame expects the proposed treatment processes to be able to meet the 200 MPN/100 ml fecal coliform limit, which is designed to protect recreational water uses. The dilution potential during the winter months is quite high and contact recreational uses are low. People using the river for direct domestic consumption below the outfall have more cause for concern. The National Interim Primary Drinking Water Standards limit fecal coliform levels in domestic water supplies to 4 MPN/100 ml. Background levels in the river already exceed this figure regularly (see Table 2-6a),

Table 2-6a. Fecal Coliform Levels Measured in the
Spokane River Below Post Falls Dam
(in MPN/100 ml)

Water Year	Month Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1975-1976	82	81	81	83	<1	81	82	82	<1	81	816	81
1976-1977	<1	<1	<1	83	83	810	69	<1	<1	<1	822	813

SOURCE: USGS 1976-1978

and the wastewater discharge will add additional biological agents. Nitrates, metals and various other potential chemical contaminants will be added in small amounts by the discharge. For those individuals that are drawing drinking water directly from the river immediately below the discharge it may be desirable to locate an alternative water source or ensure that the water is being treated prior to consumption.

The summer season river discharges of Alternative B pose a more serious health threat. River flows typically reach their lowest point in August and recreational uses are at their highest point (see the Beneficial Uses section for estimates of numbers of users). Even though the effluent should continue to meet the NPDES limitation on fecal coliform, the combination of sluggish river flows, historically high background coliform levels (see Table 2-6a) and peak water contact recreational use creates the potential for public health problems. Recreational users may perceive the river discharge as a threat even if outbreaks of infection or illness do not occur.

If treatment plant malfunctions were to occur and Post Falls discharged partially treated or untreated wastewater to the river, an immediate public health hazard would be created, especially in the summer months. Swimmers, rafters and kayakers would be in danger of being affected. Persons drawing water from the river for domestic consumption would have to abandon their water supply. This health risk could be substantially mitigated or avoided by providing emergency storage ponds at the treatment plant site.

A final health consideration of the proposed surface water discharge is the fact that the Spokane River between Post Falls, Idaho and Greenacres, Washington recharges the Spokane Valley-Rathdrum Prairie aquifer. According to Drost and Seitz (1978) the river contributes about 80 cfs to the aquifer on the average. This interchange is sizeable but should be compared to other hydrologic factors. The surface flow of the river below Post Falls has averaged about 6,300 cfs over a 65-year period of record, and the groundwater flow in the aquifer at the stateline is estimated at about 960 cfs (Drost and Seitz 1978). A substantial amount of dilution is therefore available to a 2.4 MGD (3.7 cfs) waste discharge placed in the river at Post Falls. The combination of dilution and the action of sunlight and biological agents should reduce any public health threat to persons drawing water from the aquifer to acceptable levels. A further discussion of the relative health threat of river disposal versus land disposal is presented in a following section.

Impact on the Rathdrum Prairie Aquifer Water Supply

The effect of the proposed Post Falls facilities plan on the Rathdrum Prairie aquifer (Figure 2-2) is a major environmental issue of this project. This is due primarily to the aquifer's status as a designated "sole source" of water supply. EPA made this designation under authority of the federal Safe Drinking Water Act in February 1978. As of 1976 the aquifer was being used as a water source by about 338,000 people in northern Idaho and eastern Washington (Drost and Seitz 1978).

Character of the Aquifer

The Spokane Valley-Rathdrum Prairie aquifer was studied in detail over the past four years. The most comprehensive physical description was prepared by Drost and Seitz (1978) for the U. S. Geological Survey. This report should be referred to for a complete description of the aquifer's character. In general, the aquifer is composed of unconsolidated glaciofluvial deposits covering an area of about 350 square miles, stretching from Lake Pend Oreille, Idaho on the north to the confluence of the Spokane and Little Spokane Rivers west of Spokane, Washington. Both the surface soils and the underlying deposits are extremely porous and are capable of rapidly transmitting water. The underground water body flows southerly then westerly at a rate of up to 64 feet per day and lies from 40-400 feet below the surface. The total recharge and discharge of the aquifer is estimated to be 1,320 cfs (Drost and Seitz 1978). The present water quality of the aquifer is described as good, with a very small percentage of water samples showing contaminants in excess of the maximum contaminant levels (MCLs) included in the National Interim Primary Drinking Water Regulations (NIPDWR; 40 CFR 141).

The wastewater land disposal site being given most serious consideration as part of Alternatives A and C is located about 2.5 miles west of Post Falls and 1 mile east of the Idaho-Washington state line (see Site S-1 in Figure 1-2). It is rolling grazing land with a surface elevation of about 2,100 feet, mean sea level. Based on well log data compiled from the IDWR (1979) and the PHD (1977), static water level is from 117-152 feet below the surface. This portion of the aquifer is described as the confluence zone by the PHD (1977); the main arm and the Coeur d'Alene arm of the aquifer converge and mix in this general area. The direction of groundwater flow at this point is westerly and the rate of flow is approximately 60 feet per day (Drost and Seitz 1978). Soils overlying the site are Garrison gravelly silt loam with 0-7 percent slopes with an estimated permeability of 0.6 to 2.0 inches per hour (U. S. Soil Conservation Service pers. comm. a).

COMMENTS (WITH SUPPORTING DOCUMENTATION) APPLICABLE TO PROJECTS IN THE DESIGNATED AREA ARE ENCOURAGED.

FEDERAL FINANCIALLY ASSISTED PROJECTS LOCATED IN THE DESIGNATED AREA MUST BE DESIGNED AND CONSTRUCTED SO AS TO PROTECT THE DRINKING WATER QUALITY OF THE AQUIFER. APPLICANTS ARE HEREBY NOTIFIED THE ENVIRONMENTAL PROTECTION AGENCY, WORKING THROUGH THE FEDERAL FUNDING AGENCY, MUST APPROVE PROJECTS PRIOR TO COMMITMENT OF FUNDS

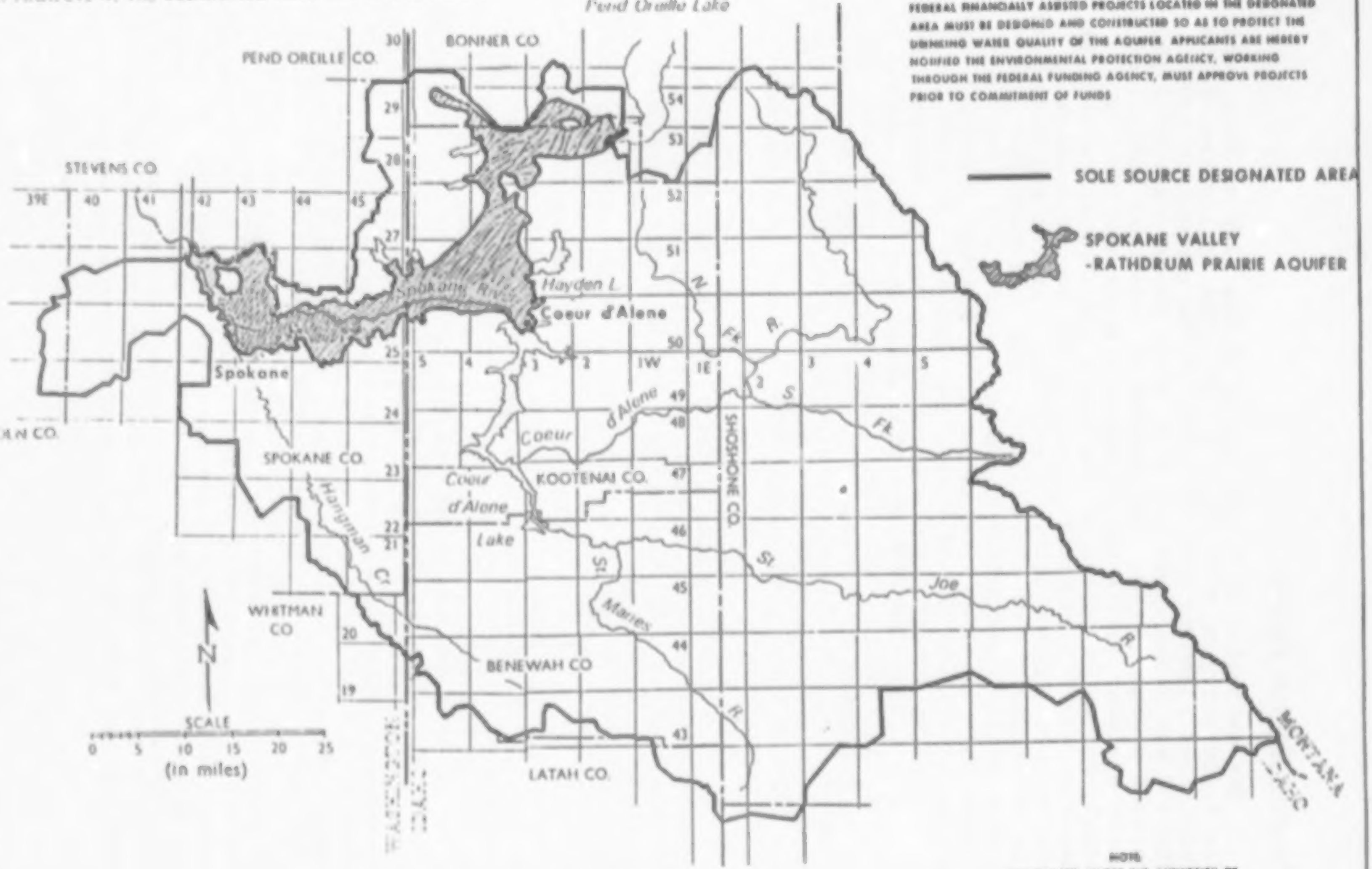


FIGURE 2-2
SOLE SOURCE AREA
FOR THE
SPOKANE VALLEY—RATHDRUM PRAIRIE AQUIFER

NOTE:
DESIGNATED UNDER THE AUTHORITY OF
SECTION 1424(e) OF THE SAFE DRINKING WATER ACT (PL 93-523)
(FEDERAL REGISTER, VOL 43, NO. 28-THURSDAY FEBRUARY 9, 1978)

EPA

Present Health Threat

The estimated 1978 population of the City of Post Falls was 4,850 (City of Post Falls 1978). The entire Post Falls facilities planning area included 10,736 persons in 1978 (LePard and Frame 1980). All of these persons are utilizing on-site sewage disposal facilities of some sort and all of these systems overlie the Rathdrum Prairie aquifer. The highly permeable nature of the soils and subsurface alluvial deposits over the aquifer have prompted recent studies to investigate whether or not the domestic wastes are degrading the water quality of the aquifer. The most comprehensive investigation, the Rathdrum Prairie aquifer 208 study, concluded that nitrates from the on-site disposal systems were migrating through the soil into the aquifer. This is evidenced by elevated and apparently increasing nitrate levels in wells in and downgradient from areas that have a high density of housing (PAC 1978). Nitrates are used here only as an indicator of the public health risk. Other substances known to occur in domestic wastewater (e.g., biological agents, metals, pesticides, complex organic and inorganic chemicals) are also of concern to people drawing water from the Rathdrum Prairie aquifer.

Wallace (1979) compiled data from the PHD (1977) in order to describe current nitrate levels in the Rathdrum Prairie aquifer near Post Falls. His data are reproduced in Table 2-7. Nitrate levels are elevated below the city when compared to upgradient agricultural areas, but the levels are still well below the NIPDWR limits of 10 mg NO_3-N (45 mg/l as NO_3). The concern is due to the trend of rapid population growth over the aquifer (therefore rapid increases in use of on-site waste disposal systems) and the apparently rapid increase in nitrate levels over the past few years. Wells in Post Falls that reported .80 mg/l NO_3 (as NO_3) or less prior to 1965 are now reporting levels as high as 8.0 mg/l NO_3 (PAC 1978, Table 7). More recent water quality monitoring conducted by EPA has found synthetic organic chemicals in small concentrations at several locations in the aquifer. As an example, a Post Falls well on Spokane Street was found to contain 16 parts per billion (ppb) 1,1,1, Trichloroethane (Burd pers. comm.). This substance is listed as a hazardous waste in the Resource Conservation and Recovery Act (RCRA) of 1976. Similar compounds are considered carcinogenic in concentrations as low as 100 ppb. While the recently measured contaminant levels do not represent an imminent health hazard, the presence of these man-made chemicals indicates that man's activities over the aquifer are influencing the quality of drinking water supplies, and local efforts to control the handling and disposal of hazardous materials is advisable.

Table 2-7. Nitrate Levels for Selected Areas Within Rathdrum Aquifer (mg/1)

Location	Range		Mean	
	NO_3	NO_3-N	NO_3	NO_3-N
Upgradient from Post Falls	.88-1.76*	.2- .4*	1.32	.3
Beneath Post Falls	3.96-8.8	.0-2.0	7.48	1.7
Beneath land disposal site S-1	2.2 -6.16	.5-1.4	3.52	.8

SOURCE: Wallace (1979).

*The NIPDWR limit is 10 mg/1 for NO_3-N and 45 mg/1 for NO_3.

Resultant Regulatory Controls

A variety of local, state and federal regulations have been spawned by concern for the aquifer. On a local level, the PHD has implemented a number of aquifer protection regulations as a result of the 208 study. The Idaho Code, Title 39, Chapter 4 gave the PHD authority to adopt and enforce rules and regulations for sewage disposal on the Rathdrum Prairie in Kootenai County, Idaho. These regulations in effect discourage construction of on-site wastewater disposal systems over the aquifer on parcels of less than 5 acres, unless the land is located within the proposed sewer service area of a city or district with a sewer management plan approved by the PHD Board of Health. There are exceptions to this 5-acre limitation, but the net effect of the PHD regulations has been to channel most growth over the aquifer into areas that are likely to be served by a central sewage collection and treatment system. The City of Post Falls entered into an agreement with the PHD on May 17, 1979 which obligated the city to proceed on planning for a central sewage collection, treatment and disposal facility. The boundaries of that sewer service responsibility have been defined as the proposed Phase I service area shown in Figure 2. Developments within the city are subject to review by PHD to ensure that on-site disposal facilities are properly designed and that new subdivisions have included wet or dry sewers that may be readily integrated into a central collection system.

The water quality management plan for the Rathdrum Prairie aquifer included 30 policies aimed at protecting the aquifer from various sources of pollution. The policy that deals specifically with land application for disposal of wastewater requires that such application must be designed "to prevent the movement of nutrients or other pollutants off the site and into surface waters, or beyond the subsurface pollutant removal zone and into the aquifer" (PAC 1978).

Several state regulations are designed to protect the Rathdrum Prairie aquifer and therefore will affect Post Falls' project. Idaho has designated the aquifer as a domestic water source and therefore must ensure that proposed projects will not cause violations of the NIPDWR. The aquifer is also classified as a Special Resource Water. Under recent revisions to the state water quality standard, (Section 1-2300.06) the Rathdrum Prairie aquifer cannot be lowered in quality unless and until it is proven to the IDHW and EPA that the change is justifiable for economic and social reasons and that assigned and possible uses of the water will not be injured.

The Idaho water quality standards also place some limits on land treatment and disposal of wastewater. Section XI, Part A of the standards require that sprayed effluent be retained on the designated disposal site or a waste discharge permit must be obtained. It also requires that 1) groundwater be monitored in the area, 2) no groundwater mound or salt buildup be created on another person's property, and 3) no public health hazard, nuisance condition or air pollution problem be created.

Section 1424(e) of the Safe Drinking Water Act allows the EPA Administrator to designate an aquifer as a sole source of drinking water for an area. The Spokane Valley-Rathdrum Prairie aquifer was designated as such in February 1978. This designation requires that EPA not commit federal financial assistance to any project or action that may contaminate a sole source aquifer and result in a significant hazard to public health. A "significant hazard to public health" is defined as any level of contaminant which causes or may cause the aquifer to exceed any MCL set forth in any promulgated NIPDWR standard at any point where the water may be used for drinking purposes or which may otherwise adversely affect the health of persons, or which may require a public water system to install additional treatment to prevent such adverse effect. The NIPDWR standards (40 CFR 141) place maximum acceptable levels on a wide variety of water contaminants, including a number that are typically found in domestic wastewater (see Appendix B for NIPDWR standards).

"No-Action" Situation

If Post Falls fails to implement a centralized wastewater collection and treatment program, the residents of the service area will continue to rely on individual on-site waste disposal. These individual systems will continue to contribute wastewater contaminants to the aquifer. The size of the waste contribution is unknown because no attempts have been made to measure the influence of an individual septic tank in the area. However, evidence gained from groundwater quality monitoring (PAC 1978) does indicate that septic tanks are contributing to groundwater degradation in the Post Falls area. Walker, et al. (1973) estimated that the average family of four contributed 73 pounds of NO_3-N to the groundwater each year through septic tanks in sandy Wisconsin soils. While this number may have no direct application to the Post Falls area, it does indicate that the nitrate contamination of aquifers in areas of coarse soils can be sizeable. The cause for concern is heightened when you consider the urban densities that exist in Post Falls.

If the PHD invoked its regulatory powers in the absence of new Post Falls wastewater facilities and restricted development densities to 1 unit per 5 acres in the Post Falls planning area, the groundwater quality problem probably would not increase rapidly. If, for any reason, the septic tank use restrictions of the PHD were removed under "no-action", and local planning agencies did not adopt similar development restrictions over the aquifer, it is likely that subsequent increases in septic tank use would result in a significant contamination of the aquifer water supply.

Impact of Wastewater Facilities Alternatives

Alternative C.

Wastewater Irrigation. Facilities plan Alternative C includes land application of wastewater at Site S-1 (Figure 1-2) from mid-April to mid-October. The water would be sprinkler-irrigated at a uniform rate of 7.25 inches per month on an orchard grass and alfalfa crop that would be harvested four to six times a year. At the 20-year 2.4 MGD flow, LePard and Frame (1980) estimates that 362 acres must be available for irrigation to dispose of the wastewater. Sludge would be disposed of by spreading on agricultural land in the vicinity of Post Falls. No sludge disposal site has been specified to date.

The facilities plan provides a lengthy description of the disposal area site characteristics, the disposal operational methodology and the potential movement of nitrogen into the groundwater as a result of the project (LePard and Frame 1980, pages 5-19 to 5-46). Nitrogen was given the most thorough analysis because it is a prevalent wastewater constituent commonly used as a measure of groundwater contamination. LePard and Frame (1980) suggest that irrigation would average about 7.25 inches per month (Table V-4) or 2.5 inches per setting with a rotation period of 9 days or less (page 5-28). With 900 pounds of nitrogen in the raw sewage each day and a 25 percent removal from treatment, the annual nitrogen loading was estimated to be 335 pounds per acre. This loading would occur over a 180-day irrigation season on 362 acres (page 5-30). LePard and Frame (1980) estimated that 265 pounds of the annual nitrogen load would be removed through plant uptake and harvesting, and an additional 15 percent would be lost from denitrification in the soils and ammonia volatilization during land application (pages 5-30 and 5-31). As a result, they calculate that 20 pounds of nitrogen per acre per year would be lost to deep percolation. This would be available for eventual movement into the groundwater. The nitrate content of the percolate was estimated at 2.6 mg/l as N (page 5-38). Although no estimate was made of the potential change in nitrate concentration in the groundwater below the disposal site, LePard and Frame (1980) did indicate that the change should be significantly less than the theoretical .31 mg/l (NO_3) increase created by normal fertilizer application procedures on area grass fields (page 5-46). With the existing 2.2 to 6.16 mg/l NO_3 levels in groundwater below the disposal area and the NIPDWR standard at 45 mg/l NO_3, the impact as predicted by LePard and Frame would seem to be relatively insignificant.

The nitrogen migration analysis conducted by LePard and Frame has several important shortcomings. First, the wastewater application schedule is tailored to a uniform disposal program of 7.25 inches per month. It would be more appropriate to adjust application rates to the actual applied water demand of irrigated pasture, thereby limiting the amount of water percolating to the groundwater. If applied water demand was utilized, the per acre annual application rate would be reduced by 44 percent from 43.5 inches (LePard and Frame 1980, page 5-29) to about 24.3 inches. This would require more acres for disposal or more storage capacity, but would provide greater protection for the aquifer and should result in a trouble-free irrigated pasture operation.

The second shortcoming relates to the estimate of 265 pounds nitrogen removal per acre by crop uptake (LePard and Frame 1980, page 5-30). If the wastewater is applied at a rate in excess of evapotranspiration needs (44 percent as indicated above), the nitrogen in that excess will not be taken up by plants, but will simply travel downward toward the groundwater. It is conceivable that as much as 147 of the estimated 335 pounds of nitrogen applied to each acre of grassland per year would pass below the root uptake zone under the proposed uniform application scheme. This would significantly increase the NO_3 change in the groundwater predicted by LePard and Frame.

One additional point deserves mention here. The feasibility analysis of irrigation disposal has focused on NO_3 as the main pollutant. It should be pointed out that nationwide there is increasing concern for numerous potentially hazardous substances that may be found in domestic wastewater. Potentially toxic metals, pesticides, herbicides and other complex organic and inorganic chemicals are being found in wastewater effluents and drinking water supplies taken from underground sources. Many of these materials are not commonly tested for, and the health effects are not well understood. This is pointed out because even though land application can provide additional wastewater treatment while allowing a recycling of water, the filtering effect of soils and the action of organisms in the aerobic soil layer may not be as efficient at assimilating and breaking down some potentially hazardous substances as is discharge to surface waters. The action of sunlight and the numerous biological agents in a flowing stream provide a significant level of treatment that is not available in a subsurface aquifer.

LePard and Frame (1980) estimated the mass application of potentially toxic elements to the land over 20 years of operating a land disposal system. The accumulated applications were all within EPA-suggested maximums for land disposal (LePard and Frame 1980, page 5-33). However, these numbers were not based on actual measurements, but instead on estimates of effluent concentration found in various sources. Also, the list of parameters did not include any of the complex organic and inorganic chemicals that are now being discovered in water supplies and are known to be hazardous to human health. These agents are of greater concern than nitrates because they are often difficult to detect, difficult to degrade and seldom monitored. EPA would require additional effluent quality data before a land application scheme would receive design and construction funding.

Sludge Disposal. Treatment processes for Alternative C would generate 165,000 pounds of dry solids annually (1.1 million gallons at 6 percent solids). This material would be trucked to agricultural land and injected subsurface as a soil conditioner and fertilizer. LePard and Frame (1980) estimates that this would require 37 acres of land, with an application rate of 4,460 pounds of solids per acre annually (200 pounds total nitrogen). A specific disposal site has not been located, but it would probably be in the Post Falls area and therefore over the Rathdrum Prairie aquifer. The nitrogen loading rate is considerably below that proposed for the wastewater application area (335 pounds per acre) and nitrogen is not likely to create a significant health impact. However, heavy metals and other pollutants in wastewater tend to accumulate in sludge. The annual heavy metal loadings predicted by LePard and Frame (1980, page 5-60) are within EPA sludge treatment and disposal guidelines, but because of the sole source aquifer designation it would be valuable to monitor shallow subsurface groundwater in the vicinity of the sludge disposal area so that long-term changes in groundwater quality could be detected. If industrial or commercial process waste streams become a significant portion of the Post Falls wastewater flow, it will be especially important to periodically test the pollutant concentrations in sludge being applied over the aquifer. Sludge disposal restrictions are discussed in greater depth in a following section.

Storage of Wastewater Over the Aquifer. One additional groundwater contamination risk created by Alternative C is the use of large, open ponds for the treatment and storage of wastewater. The aerated lagoon treatment system will eventually include four large ponds, each with an 18-million-gallon capacity. These ponds will be in use throughout the year for either treatment or storage. All of the proposed treatment locations are over the Rathdrum Prairie aquifer. The ponds will be constructed with a double seal, using both a membrane and clay layer. This should restrict movement of wastewater from the ponds to underlying groundwater, but there will always be the risk of leakage. Groundwater monitoring on the perimeter of the lagoons should be used to detect leakage.

Elimination of Septic Tanks. The most positive public health effect of Alternative C would be the sewering of all residences that currently exist in the Phase I service area and elimination of all on-site systems for wastewater disposal. As indicated before, 208 water quality management studies in the area have identified septic tanks and cesspools as a significant source of groundwater pollution. This groundwater is being used as a drinking water supply by thousands of people downgradient from Post Falls. Using Walker et al.'s (1973) estimate that 73 pounds NO_3-N per year can be contributed to groundwater by a family of four hooked to a septic tank, the total NO_3-N loading on the aquifer could be reduced by more than 146,000 pounds annually after Phase I construction and hook-up of all residents in the Phase I service area. This number is strictly hypothetical, but gives some indication of the size of the load reduction. The change this is likely to create in aquifer water quality has not been calculated. It would depend in part on what land use and sewering changes occur upgradient from the Post Falls area. However, the impact would undoubtedly be positive. Wastewater that is presently being carried below surface year-round with only minimal treatment and little chance for plant uptake would instead be treated to a secondary level, disinfected and allowed to percolate through the biologically-active upper soil layer. The removal of wastewater pollutants would obviously be enhanced by this change in treatment and disposal.

Alternative A. Alternative A proposes the same basic seasonal land application and river discharge disposal process as Alternative C. However, the treatment process would be a mechanical extended aeration system rather than an aerated lagoon system. The groundwater impact from land application of liquid effluent should be similar to Alternative C, but Alternative A would have a much higher annual production of sludge. The extended aeration process would produce 550,000 pounds of dry solids annually (24,800 pounds total N) or 330,000 gallons of liquid sludge at 6 percent solids (LePard and Frame 1980, page 5-58). This larger volume of sludge would require a minimum of 124 acres for the sludge injection operation. If the sludge is applied uniformly to the land and the necessary acreage is available at all times, the impact on the groundwater should not be significantly different than Alternative C. However, if land availability becomes a problem and the sludge is applied at a per acre rate greater than Alternative C, the chances for eventual movement of wastewater constituents into the groundwater would increase.

Alternative A would not require a large complex of earthen lagoons for wastewater treatment as would Alternative C. The treatment process would occur in much smaller concrete aeration basins. The only earthen holding structures would be a 540,000-gallon sludge storage lagoon at the treatment site and a 20-acre emergency effluent storage pond at the irrigation disposal site. These structures would be double-sealed. The smaller acreage of earthen lagoons would reduce the chance of affecting the aquifer through pond leakage.

The positive public health implications of eliminating on-site waste disposal systems in the Post Falls area would be the same for Alternatives A, B and C.

Alternative B. Alternative B includes mechanical extended aeration treatment of Post Falls wastewater with seasonal phosphorus removal and year-round discharge to the Spokane River. The potential groundwater quality impacts of this alternative are considerably less than Alternatives A and C. There would be no land application or storage of effluent over the Rathdrum Prairie aquifer. The treatment level would be similar to Alternatives A and C in the winter, but would be improved by phosphorus removal between April 1 and October 31.

All effluent would be discharged to the Spokane River. The fact that the Spokane River recharges the Rathdrum Prairie aquifer between Post Falls and Greenacres, Washington is the only item of concern. According to Drost and Seitz (1978), the river contributes about 80 cfs to the aquifer on the average. This interchange is sizeable but should be compared to other hydrologic factors. First, even during the lowest recorded flow situation, the 2.4 mgd (3.7 cfs) wastewater discharge would be dispersed in a river discharge of 113 cfs (the summer period Q_{7-15} flow). With a properly designed diffuser this could provide an initial dilution of as much as 30:1. In practice, the river is not allowed to drop below 300 cfs, and the 65-year recorded average flow is about 6,300 cfs. In addition, the 80 cfs interchange between the river and the aquifer is a relatively small percentage of the total aquifer flow of about 960 cfs at the state line

(Drost and Seitz 1978). A substantial amount of dilution is therefore available to a 2.4 MGD waste discharge placed in the river at Post Falls. Table 2-4 indicates that the Alternative B summer discharge would increase the nitrate plus nitrite concentration in the Spokane River during Q_{7-15} flow conditions by .056 mg/l. In addition, any pollutants discharged to the river would be exposed to the action of sunlight and biological agents present in the stream.

The sludge volume produced by Alternative B would be greater than Alternatives A and C. Annual sludge production is estimated at 1.3 million gallons or 630,000 pounds of dry solids (24,800 pounds of total nitrogen). The larger volume of sludge is created by the addition of large amounts of alum for phosphorus removal. The alum precipitates out with other waste solids and therefore must be disposed of with the sludge. While this large increase in sludge adds to the cost of sludge handling and disposal, it should not create any new threat of groundwater contamination beyond that described for Alternative A. Because the total nitrogen content of the sludge would be the same as Alternative A, the land requirement for disposal would be the same, 124 acres (LePard and Frame 1980, page 5-59).

Use of Other Treatment and Disposal Sites. The groundwater quality impacts described above have been based on the use of treatment plant site T-1 and disposal area S-1 (see Figure 1-2). The impact from using other treatment and disposal sites would not be significantly different, as nearly all of the sites (except T-4 and T-6) are covered by the same soil type (Garrison gravelly silt loam, 0-7 percent slopes) and all overlie the Rathdrum Prairie aquifer. Depth to groundwater is probably less at Sites T-1, T-3, T-4 and S-3 due to their proximity to the Spokane River, but the exact differences are unknown. Use of Site S-3 as a spray disposal area might increase the chances of groundwater contamination because of this elevational difference. The number of local wells that could eventually be affected by the land application of effluent would be increased by selecting Site S-2 for disposal because it is closer to town and upgradient from the other two proposed sites (see Figure 1-2).

Risk Analysis

The fact that both land application or river discharge of Post Falls' wastewater could ultimately degrade a major drinking water source (Spokane Valley-Rathdrum Prairie aquifer) to some degree, makes it especially important to consider the risks involved with each alternative. As noted above, it is difficult to quntify the impact of disposal alternatives.

There are insufficient data on actual effluent quality and local groundwater hydrology to place specific numbers in the impact discussion. Therefore, it is valuable to briefly describe the various subjective elements of risk that can be associated with each disposal mode.

Benefits of Land Application vs. River Discharge. The obvious benefit of the year-round river discharge alternative (Alternative B) is its lower capital cost when compared to the two land application schemes (Alternatives A and C). Alternative B has an estimated Phase I capital cost of $2,028,000 less than Alternative A (see Table 2-15). This includes the cost of land.

The land disposal scheme reuses the wastewater and recycles a portion of the nutrients into crops. It should be noted, however, that there is not a shortage of water in the Post Falls area, and the water would probably be applied to an area that is not currently irrigated or fertilized. The reuse would therefore not be reducing existing water demand.

An additional benefit of summer irrigation of effluent would be a reduction in the waste load to the Spokane River. As noted in the Surface Water Quality Implications section of this chapter, the adverse implications of a summer discharge are judged to be minimal, but there would be some obvious aesthetic and psychological benefits accrued by recreational users of the Spokane River below the proposed outfall if a summer discharge did not occur.

Knowledge of Contamination Mechanism. Technical knowledge of the real health risks created by contamination of water supplies with elements and compounds labeled as hazardous is relatively incomplete. Many water contaminants have been labeled as hazardous after relatively brief laboratory testing on animals. However, public health testing must be stringent and is designed to provide maximum protection to the public. Testing results have provided sufficient proof that a hazard to man exists if hazardous materials are ingested by drinking the water. In addition, knowledge is very limited regarding the quantity and numbers of hazardous wastes likely to be in the Post Falls effluent. In light of this imperfect technical knowledge, we must discern whether it is better to dispose of the effluent on the land or in the river. To help define this issue, the relative knowledge of pollutant transfer from disposal area to drinking water supply can be compared.

The transfer or convergence of wastewater constituents from a sewage outfall to the river is easily understood, and the levels of contamination can be easily estimated and measured downstream.

In comparison, the transfer of pollutants from a land application site to the groundwater is not as well understood and definitely less observable or measurable. Some information is available about the filtering ability of soils, but this pertains primarily to classic pollutants, such as nitrate, bacteria, viruses and heavy metals. Relatively little is known about the fate of the many complex organic compounds now being produced by man and considered hazardous. In addition, the actual hydraulic relationship between land-applied wastewater and the underlying aquifer is only speculative. The ability to monitor and detect the transfer of pollutants at a land disposl site is poor compared to river discharge.

Probability and Cost of a Catastrophic Impact. Probably the most severe or catastrophic event that could be associated with disposal of Post Falls' wastewater would be an uncontrolled discharge of untreated and/or highly toxic materials. This could be created by an undetected release of toxic materials into the city's waste stream. This worst-case scenario would not be a serious public health threat unless discharge contaminated a drinking water supply or water contact recreational waterway.

If such an event were to occur in a Spokane River discharge, the river itself would immediately be a health threat to those persons drawing drinking water from the river and those water contact recreationists using the river downstream. Some portion of the contaminant could also eventually move into the aquifer through the river's recharge zone and threaten major groundwater supplies downgradient. The positive aspects of the river discharge option is that the chance of early detection of the hazardous discharge is much greater than with land disposal. Cleanup of the river would also proceed more rapidly due to the natural cleansing action of sunlight and the biological activity normally found in a stream. Until the contamination was cleaned up, the comparatively small number of persons using the river as drinking water would have to seek another water source. Contact recreationists would have to avoid the river.

If a hazardous discharge occurred at a land disposal site, there would probably be no immediately recognized public health threat. Depending on the nature of the contaminant and its propensity for uptake by plants or adsorption to soil particles, there is the possibility that it would not migrate to the groundwater supply. The negative side of land discharge is that once any hazardous material moved below the aerobic soil layer, it would be exposed to little or no biological modification and could not be cleaned up by human action. If an acute or chronic discharge of toxic materials did enter the groundwater and create a public health hazard, an extremely large segment of the area's population (in the Post Falls area and eastern Washington) might have to seek a new water source.

Latency. The actual health effects of groundwater contamination, if it were to occur, might not be felt for many years, and might never be positively traceable. This is due, in part, to the fact that some waste materials are hazardous only after chronic exposure over relatively long time periods. It might also take a considerable amount of time for hazardous materials to migrate from the disposal area to a portion of the groundwater that is being used domestically. The travel time would be much slower from the irrigation disposal operation, but the latency of effect could be true for either land disposal or river discharge. Tracing a hazardous discharge and assigning liability for it would be easier with a river discharge of wastewater than with land application.

Irreversibility. Water contamination created by a surface water waste discharge would be much easier to correct than one created by an irrigation disposal operation. A surface water contamination can be detected more readily. It is also usually subject to greater diffusion and dilution, and it is more accessible to natural or human cleanup. In the case of a discharge to the Spokane River at Post Falls, it might also have an impact on the groundwater downgradient. The City of Spokane's Well Electric, a major domestic water supplier, is located adjacent to the river 24 miles downstream. It draws groundwater downgradient from where the Spokane River recharges the aquifer. The major impact, however, would remain in the stream environment.

Summary of Risk Assessment. There are several elements of risk that should be summarized from the preceding discussion. First, the probability of the Post Falls waste discharge containing materials that pose a serious public health threat is very speculative. Local, state, and federal regulation of wastewater treatment facilities are aimed at avoiding any hazardous waste discharges. If, however, hazardous materials were carried in the effluent, the detection and cleanup would be easier with a year-round river discharge. In addition, prediction of the eventual effects of a discharge to surface waters is more likely to be valid than prediction of subsurface changes and movements of materials in the Rathdrum Prairie aquifer. Finally, even if the low probability of creating a serious public health threat supports selection of seasonal land disposal, Post Falls and its residents could be paying a higher cost for wastewater service if land disposal was implemented. The users of the Spokane Valley-Rathdrum Prairie aquifer below Post Falls would have the low probability risk of exposure to a public health hazard, should hazardous wastes enter the aquifer from either a river or land disposal.

Mitigation of Potential Groundwater Quality Impacts

Legal Authority for Mitigation. There are a number of federal laws and regulations which allow EPA to reduce the probability that a groundwater-related health hazard would be created by disposal of Post Falls' wastewater. The Clean Water Act, which gives EPA permit authority over any wastewater discharge to surface waters of the United States, is the major tool. The EPA-issued NPDES permit will specify the level of wastewater contaminants (5 conventional plus any of over 65 priority pollutants) that can be contained in any effluent discharged to surface waters (33 USC 1251 Sec. 402[a]). In addition, the Clean Water Act allows EPA to require an inventory of significant industrial or commercial waste stream sources and a pretreatment ordinance for waste streams containing a toxic pollutant (33 USC 1251 Sec. 402[b] [8]).

The federal Safe Drinking Water Act, which gave EPA the authority to designate the Rathdrum Prairie aquifer as a "sole source" water supply, also prohibits EPA from funding a project which would create a significant health hazard in the aquifer (42 USC 300f, 300h Sec. 1424[e]). To meet this legal requirement, EPA can place conditions (i.e., monitoring requirements, operational requirements, etc.), on the grant to Post Falls for design and construction of its treatment plant and disposal system.

A third source of influence EPA can utilize as a basis for mitigation is the aquifer protection policy of the federally-adopted 208 water quality management plan for the Rathdrum Prairie aquifer. It requires protection of the aquifer from land application of wastewater (see EPA Mitigation Strategy, below).

Finally, EPA can indirectly identify potential water quality problems through the RCRA (1976). This act allows EPA to inventory and establish storage, treatment and disposal regulations for over 85 waste streams and 400 chemical discards. These regulations are aimed primarily at control of industrial and commercial operations dealing with hazardous wastes. Domestic wastewater is excluded from RCRA control, but sludges are not. All industries in the Post Falls area that generate, store, treat or dispose of any of these hazardous wastes must register with EPA. This registration process, along with an inventory of industrial and commercial wastewater hookups, would allow EPA to identify potentially hazardous materials in wastewater effluent.

EPA Mitigation Strategy. There are no formal federal regulations or EPA policies for control of wastewater disposal over a sole source aquifer. Regulations are being developed on a national level but are incomplete. There is a set of general regulations for land disposal of wastewater over a subsurface water supply (Alternative Waste Management Techniques for Best Practicable Waste Treatment Technology, Federal Register, February 11, 1976), which establishes minimum protection of a sole source water supply. In response to a letter from the PAC regarding Coeur d'Alene's facilities planning, EPA Region 10 issued preliminary guidance for entities seeking to dispose of wastewater on lands over the Rathdrum Prairie aquifer (Burd pers. comm. a). This guidance, in effect, establishes a mitigation scheme for potential groundwater quality impacts. The contents of this guidance are summarized as follows:

- In the facilities plan, describe ambient groundwater quality data relative to the MCLs in the NIPDWR and other pollutants of concern.
- Identify recent surface activities upgradient from the proposed disposal site that might have later adverse effects on groundwater quality.
- Plan for effluent quality monitoring prior to land disposal.
- Establish and maintain an industrial connections inventory consistent with EPA's pretreatment requirements.
- Establish EPA-approved monitoring wells - one upgradient and two downgradient from disposal site.
- Sample monitoring wells for all MCLs and other identified pollutants from the priority pollutant list prior to land discharge (see Appendix B for priority pollutants).
- Monitor wells quarterly (or less often if justified) for MCLs, total trihalomethane potential or trihalomethanes (if effluent chlorinated), and other priority pollutants found in initial effluent monitoring.

- Monitor for all priority pollutants at each well once annually.

- Monitoring program is to be continuous throughout the life of the project.

- Monitoring program developed by the city must be approved by EPA prior to award of Step 3 grant.

- Facilities plan must predict the soil treatment capabilities of the unsaturated zone at the proposed disposal site.

- Comply with Clean Water Act pretreatment requirements and control all industrial or other waste discharges that might impact MCLs or priority pollutant parameters.

- Wastewater application rates not to exceed 2.3 inches per week (applied over a period of days).

- If sludge is applied to land over the aquifer, groundwater quality monitoring similar to that described above would be required.

If the above-described monitoring program indicated that degradation was occurring, EPA would require added treatment, tighter controls over dischargers to the system, prohibition of certain surface activities, or provision of an alternative effluent disposal system.

It should also be noted that the list of MCLs may be expanded in the future and the pending sole source regulations may place more stringent control on federally-funded land application systems (Burd pers. comm. a).

Public Health Risks on and Around the Spray Disposal Area

Spray disposal of treated wastewater can create a health risk to persons on or adjacent to the disposal area. Biological agents (virus, bacteria) typically found in treated wastewater can cause illness or disease if ingested by humans. The two most typical means of infection are inadvertent ingestion of wastewater or inhalation of wastewater aerosols created during spraying. Inadvertent ingestion (e.g., drinking) can be effectively avoided in most cases by fencing disposal areas and posting signs that warn of the hazard. All water spigots, pipes and nozzles can be marked with warnings. The site can also be designed to keep wastewater runoff from leaving the area. The chance of persons accidentally or intentionally wandering onto a spray site can also be reduced by selecting an isolated disposal area. Land disposal Site S-1 is the most isolated of the three proposed alternatives (see Figure 1-2). Site S-2 is in a developing area and a potential flood hazard area, and Site S-3 is located adjacent to a residential area and the Spokane River, a popular site for recreational activities.

The health risk from aerosols is more difficult to control. Isolation, use of vegetative screens, maintaining buffer strips and fencing of the spray area are the most effective safeguards. Again, Site S-1 appears to be the best from this perspective. The nearest developments are a farm about 1,000 feet to the west, a hardtop racing track 1,500 feet to the west, a storage elevator complex immediately adjacent to the southern perimeter, and a housing development 1,000 feet to the east. Additional protection can be achieved by a variety of operational measures: all wastewater should be properly disinfected prior to irrigation; low trajectory and low pressure sprinkler heads should be used to keep fine aerosols from forming and drifting off of the site; irrigation should cease during periods of high winds. This latter measure would be especially important because the prevailing wind direction is from the west and southwest; this would carry aerosols toward the residential areas nearest each proposed disposal site.

Influence on Soils and Crops

Alternatives A and C both involve irrigation disposal of Post Falls' wastewater from April 15 to October 15 of each year. This wastewater will contain a variety of salts, metals and organic materials that could influence the ability of the disposal site soils to support crops over the 20-year planning period of the wastewater project.

Three potential irrigation disposal sites have been identified in the facilities plan (see Figure 1-2). Each of these sites is covered predominantly by Garrison soils. This soil type has a low clay and organic matter content, a coarse texture and a moderate permeability. The project engineers have estimated that up to 7.25 inches of wastewater would be applied to the land each month from the middle of April to the middle of October. A combination of orchard grass and alfalfa would be grown on the irrigated area and periodically harvested.

The major soil-related concern over this wastewater application is whether the various constituents in the wastewater would eventually limit the soil's ability to support crops. Wastewater application can increase soil salinity, decrease permeability or result in specific ion build-up in the soil that eventually reduces crop yields or becomes phytotoxic. Table 2-8 lists some key effluent quality parameters estimated for Post Falls by Le Pard and Frame.

To determine the potential for soil and crop damage, the effluent quality predicted by Le Pard and Frame (Table 2-8) has been compared to irrigation water quality guidelines developed by the University of California Committee of Consultants and reported in Ayers (1977). Salinity and permeability do not appear to be a problem, as the estimated electrical conductance of 0.625 mmhos/cm and sodium adsorption ratio of 3 are within the "no problem" category of the irrigation guidelines (see Appendix B). Anticipated sodium (58 mg/l) and boron (0.4 mg/l) concentrations are also well below those levels that are reported to be toxic through root or foliar uptake. The specific crops that are planned for use on the irrigation areas (orchard grass and alfalfa) are relatively tolerant according to charts presented in Ayers (1977). The coarse soil textures found in the area (gravelly silt loam and very gravelly silt loam) and the low estimated solids content of the effluent indicate that soil clogging should not be a significant problem.

Assuming that effluent quality data presented in the facilities plan are a true measure of actual Post Falls effluent, it appears that soils and crops would not be significantly degraded by the planned irrigation scheme. However, in order to assure that long-term damage does not occur, effluent quality should be closely monitored for the key parameters listed in Table 2-8. The irrigation schedule should also be closely regulated so that sufficient drying periods are allowed to avoid soil pore clogging. Also, sufficient water should be applied to avoid salt build-up in the upper effective rooting zone of the grass crops.

Land Use Conflicts

Introduction

An important issue in this EIS is the identification of potential land use conflicts associated with the facilities plan alternatives. This section describes the existing land uses of the proposed wastewater treatment plant and land application sites and evaluates the potential land use conflicts involved with each alternative site.

Table 2-8.* Estimated Post Falls Effluent Quality

Total dissolved solids (mg/l)	400
Electrical conductance (mmhos/cm)	0.625
Sodium adsorption ratio	3
Biochemical oxygen demand (mg/l)	30
Boron (mg/l)	0.4
Sodium (mg/l)	58
Calcium (mg/l)	52
Manganese (mg/l)	42

*Source: Modified from Le Pard and Frame, Inc. 1980.

Land Use Characteristics of Proposed Sites

Location. The location of the seven alternative treatment plant and land application sites is shown in Figure 1-2. All of the sites, with the exception of T-4 and a section of T-5, are located in the unincorporated portion of Kootenai County. The sites are located in primarily uninhabited areas.

It should be noted that most of the interceptor routes in Figure 1-2 are designated within an existing right-of-way. Although some construction-related adverse impacts have been identified, potential land use conflicts are not considered significant.

Existing Land Use Conditions. The existing land use conditions of the proposed treatment plant and land application sites are identified in Tables 2-9 and 2-10, respectively. Zoning designations have been indicated to signal potential land use conflicts. The surrounding land use conditions provide the framework for evaluation of potential land use conflicts.

Treatment Plants. All of the treatment plant sites, except T-4, are zoned primarily as "agricultural" or "agricultural suburban" by Kootenai County. Site T-4 is designated as open space in the City of Post Falls zoning ordinance. A zoning change would be necessary to locate a treatment plant at any of the sites.

All of the treatment plant sites, except T-4, are currently used for agricultural purposes. A discussion of the direct construction impacts on agricultural land was presented earlier in this chapter.

Land Application Sites. The three alternative land application sites are zoned for either "agricultural" or "agricultural suburban" by Kootenai County. Since spray irrigation operations are generally compatible with agricultural use, no zone change would appear necessary. All of the land application sites are currently in agricultural use, with the exception of a few rural residences in the southern portion of S-3.

Land Requirement. Land requirements for the proposed treatment plants depend on the treatment process selected. Table 2-11 presents the land requirements for treatment of 2.4 MGD of flow by extended aeration and aerated lagoons. An extended aeration/activated sludge plant would require 15 acres for the plant and related uses (i.e., roads and buffer zone) (Alternative B). If a seasonal land application site is selected for effluent disposal, an additional 400 acres would be necessary (Alternative A). An aerated lagoon plant

Table 2-9. Land Use Characteristics and Zoning Classification of Proposed Treatment Plant Sites

Proposed Treatment Plant Sites	Zoning	Land Use Characteristics of Treatment Plant Site	Land Use Characteristics of Adjacent Area
T-1	Agricultural suburban	Agricultural use - grass seed	East - small tree farm Northeast - rural residential across road/low density Remaining area - agricultural
T-2	Agricultural suburban	Agricultural use - field crops	East - scattered residential Southeast - commercial Remaining area - agricultural or vacant
T-3	Agricultural suburban, Commercial, Open space	Rural residential/low density	Scattered rural residential
T-4		Vacant land	Southeast - lumbermill North - railroad and highway right-of-way South - Spokane River near Post Falls Dam
T-1A	Agricultural, Agricultural suburban	Agricultural use - grass seed	West - Jacklin seed processing plant North - Interstate 90 Remaining area - agricultural

Table 2-9 Cont'd.

Proposed Treatment Plant Sites	Zoning	Land Use Characteristics of Treatment Plant Site	Land Use Characteristics of Adjacent Area
T-5	Agricultural suburban, Commercial (county), Industrial (city)	Agricultural use - field crops Commercial	South - Interstate 90, auto dealer North - state highway Remaining area - agricultural and vacant
T-6	Agricultural	Agricultural use and vacant land	South - state highway Northeast - racing facility Remaining area - agricultural

Table 2-10. Land Use Characteristics and Zoning Classification of Proposed Land Application Sites

Proposed Land Application Sites	Zoning	Land Use Characteristics of Land Application Site	Land Use Characteristics of Adjacent Area
S-1	Agriculture	Agricultural use - grazing	South - agricultural storage facility East - within .25 mile of trailer park and a few rural residences Remaining area - agriculture
S-2	Agriculture	Agricultural use - grassland	West - scattered rural residences East - residential South - state highway North - agriculture
S-3	Agriculture, Agricultural suburban	Agricultural use - grassland A few rural residences in the southern portion	South - river East - scattered residences North - Interstate 90 and railroad

Table 2-11. Land Requirements of Alternatives

Alternative	Treatment Plant Type (2.4 MGD)	Land Requirements for Treatment Plant (acres)	Land Requirements for Land Application Site (acres)	Total Land Requirements (acres)
A	Extended aeration/ activated sludge	15	400	415
B	Extended aeration/ activated sludge	15	0	15
C	Aerated lagoons	40	380	420

SOURCE: LePard and Frame 1980.

would require 40 acres for treatment with an additional 380 acres for land application (Alternative C). All of the land application sites and treatment plant sites, with the exception of T-4, are of sufficient size to locate either type of treatment plant.

Because the project is going to be implemented in phases, the initial development of land will be less than that described above. The final draft of the facilities plan, however, does not specify the land requirements of the first phase at the 2.4 MGD planning level. This would depend to some degree on the availability of project funding.

Potential Land Use Conflicts

The surrounding land use of the alternative treatment plant and land application sites is presented in Tables 2-9 and 2-10. The operation of a treatment plant or land application site poses direct impacts on the human environment. These impacts include odor, noise, and visual aesthetics. The following section describes these factors and evaluates the potential impact associated with each alternative site. In addition, potential mitigation measures are discussed.

Direct Environmental Factors.

Odor Generation. In general, the main source of concern with wastewater treatment plants is odor. Odors can result from different odor-producing points at the plant, such as headworks, aerated lagoons or a sludge-handling facility. However, proper design and operation are principal factors in determining if a treatment plant will emit odors. In general, lagoon treatment systems have a greater chance of creating odor problems than mechanical systems because it is more difficult to maintain the proper level of wastewater aeration in a lagoon. Anaerobic decomposition of organic matter produces more objectionable odors than does aerobic decomposition.

The impact of odors is largely determined by prevailing winds. In the Post Falls region, winds from the west and southwest are predominant, especially in summer when high temperatures present additional odor problems. Winds from the northeast are prevalent sometimes in winter months (U. S. Army Corps of Engineers 1976, Appendix E).

Noise Generation. Typically, adverse noise impacts are associated with the operation of treatment plants. Objectionable noise levels result primarily from trucking activity to and from the plant. As with odor impacts, prevailing winds play a key role in the degree of impact. Other factors such as frequency of noise impact, level of noise impact, and individual perception are important considerations.

Visual Appearance. Wastewater treatment plants often impose adverse visual impacts on surrounding areas. Although the degree of impact is dependent on individual perception, the visual appearance of treatment plants is often in contrast to the surrounding environment. This can result in an adverse aesthetic impact on a neighborhood or nearby road.

Site Evaluation. Table 2-12 identifies the potential impact associated with each treatment plant and land application site. The sites were evaluated in terms of odor, noise and visual impacts. The degree of impact was determined primarily by evaluating the proximity of sites to residential and highway uses and the potential frequency of impact.

As shown in Table 2-12, Site T-6 has the least potential for land use conflict of the alternative treatment plant sites considered. The remoteness of the site from other human activities accounts for this designation. The site with the highest potential for land use conflict is T-2 due to its proximity to residences and commercial activities. In general, the remaining treatment plant sites represent a more moderate potential for adverse land use impacts. All the land application sites have a low potential for land use conflict due to the compatible existing land use activities.

It should be noted that the preceding analysis examined potential land use conflicts from the viewpoint of existing land uses. If near-term land use planning is considered, certain potential conflicts are apparent. At Site T-1A, industrial and commercial use are proposed for some of the adjacent land. A zoning change would be required which could result in the entire area being rezoned for commercial and industrial purposes. Another site with proposed land use changes is S-1. On a portion of the site a gravel pit operation has been proposed. In addition, a main thoroughfare which would pass adjacent to Site S-1 is under consideration.

Mitigation Measures. The adverse environmental factors identified in Table 2-12 can be controlled. This would minimize objections to the treatment plant and land application operations. In many cases, the direct adverse effects can be significantly reduced by buffer zones. Buffer zones alleviate adverse visual impacts and help dissipate undesirable noise and odors. In other cases, however, additional measures would be necessary. Table 2-13 identifies other potential mitigation measures.

Table 2-12. Potential Impact of Alternative Treatment Plant and Land Application Sites on Human Environment

Treatment Plant Site	Direct Environmental Factors								
	Odor Impact			Noise Impact			Visual Impact		
	High	Mod.	Low	High	Mod.	Low	High	Mod.	Low
T-1		x			x			x	
T-2	x				x			x	
T-3		x			x		x		
T-4	x					x			x
T-1A		x				x			x
T-5		x				x		x	
T-6			x			x			x
Land Application Sites[1]									
S-1			x		NA[2]			NA	
S-2			x		NA			NA	
S-3			x		NA			NA	

---

[1] Only odor generation applicable for adverse impacts. Odor generation could result from over-application and build-up of treated effluent.

[2] Not applicable.

Table 2-13. Potential Mitigation Measures

Odor Reduction

1. Ensure that all facilities are properly maintained, including all odor control equipment.
2. Establish a means of monitoring plant odor production so that any off-site impacts can be rapidly detected and corrective action can be taken.

Noise Reduction

1. Restrict truck traffic to the hours between 9:00 a.m. and 5:00 p.m.
2. Enclose all pumps and motors in acoustically designed structures.
3. Maintain a berm around all treatment facilities.

Visual

1. Maintain a berm around all treatment facilities.
2. Plant shrubs and trees around treatment facilities.

Energy Consumption

Wastewater treatment in the Post Falls area is currently provided by septic tanks with drainfields, cesspools and other on-site systems. These facilities do not utilize an external power source to treat the wastewater. The wastewater collection, treatment and disposal system proposed for Post Falls will require a significant energy input in the form of electricity to run pump stations, treatment plant equipment and, with Alternatives A and C, an irrigation disposal system. The extent of the energy needed varies from one proposed alternative to the next and from one treatment plant site and disposal area location to the next.

LePard and Frame (1980) calculated both primary and secondary energy requirements for each of the three project alternatives considered in the facilities plan. These numbers are presented in Table 2-14.

Table 2-14

Alternative Project Energy Requirements[1]

(per year at 2.4 mgd flow)

Energy	Alternative A	Alternative B	Alternative C
Primary[2]			
Kwh	1,525,100	1,116,300	1,372,600
10^6BTU	660	880	460
Secondary[3]			
Kwh	1,200	1,232	1,200
10^6BTU	---	320	---
TOTAL (in 10^6BTU)	5,872	5,016	5,151

[1] Source: modified from LePard and Frame, Inc. 1980.

[2] Energy used in transport, treatment and disposal of wastewater.

[3] Energy required to produce the chemicals used in wastewater treatment.

All energy calculations were based on use of treatment plant Site T-1 and disposal Site S-1. No estimates were made for use of other disposal sites, but communications with the facilities plan engineers (LePard and Frame, Inc. pers. comm.) indicate use of treatment Site T-1A would increase annual electrical demand by 22,000 Kwh and use of Site T-6 would increase demand by 400,000 Kwh. No increase would be expected with Site T-5. Estimates were not made for Sites T-2, T-3 or T-4. If the disposal site was changed, there could also be a change in energy demand, but the extent of the change would depend upon the ultimate location of the treatment plant. Disposal area S-2 is slightly higher in elevation than S-1 so would probably require an extra increment of energy, while Site S-3 is lower in elevation and could probably be serviced by gravity feed from the treatment sites.

As the figures in Table 2-14 indicate, Alternative B would require the smallest amount of primary electrical energy. This is because effluent would be gravity fed to the river year-round, rather than pumped up to a land disposal area and sprinkler irrigated during the summer as in Alternatives A and C. Alternative C has a slightly lower electrical requirement than A because the treatment process (aerated lagoons) utilizes less mechanical equipment. Primary energy consumption expressed in BTUs relates to treatment plant heating needs, yard maintenance and fuel consumption in digesting and transporting sludge. Alternative B, which would generate the most sludge, therefore has the highest consumption rate in this category. Alternative C has the lowest primary BTU requirement because it generates the least sludge.

Secondary energy requirements relate to the power used in producing treatment chemicals. Since Alternative B includes use of aluminum sulfate for phosphorus removal and sulfur dioxide for summer dechlorination of effluent, it has the highest secondary energy requirement. Alternatives A and C, which use chlorine for disinfection, have basically the same secondary energy demand.

If all of these energy use categories are converted to a common BTU denominator and summed, Alternative A shows the highest overall energy demand by some 721,000,000 BTUs annually (see Table 2-14). Alternative B has the lowest total demand, 135,000,000 BTUs less than Alternative C.

The Washington Water Power Company (WWP), which supplies electrical and natural gas energy to the area, should be able to provide the necessary power. However, because WWP has not been able to increase its hydroelectric power generating capacity in recent years, its electrical energy supplies have been stretched quite thin, especially in dry years (Witter pers. comm.). For this reason, WWP has encouraged installation of utilities that use natural gas wherever possible. The area's natural gas supply, primarily from Canada, is presently much more capable of absorbing demand increases.

The overall project energy demands can be kept to a minimum by selecting treatment processes and disposal modes with the lowest power requirements. Alternative B requires the least electricity and the least total energy (in terms of BTUs). Secondary energy demands can be minimized by closely monitoring chemical dosing rates so that chemical consumption is kept as small as possible.

Project Costs

Total Cost Comparison of Alternatives

The Post Falls draft facilities plan (LePard and Frame 1980) presented cost summaries for Alternatives A, B and C in a series of tables (V-11 to V-18). The numbers were developed using cost curves presented in EPA manuals and assumed initial construction of a 2.4 MGD facility.

After review of the draft facilities plan, the IDHW and EPA requested that new estimates be made based on a smaller 20-year planning population, and therefore a smaller sized wastewater system (1.5 MGD). The final draft facilities plan (LePard and Frame 1980a) presented revised numbers; Tables 2-15 and 2-16 have been taken from the final draft facilities plan and indicate the capital cost and equivalent annual cost differences of the three alternatives at the 1.5 MGD planned capacity level. Use of treatment plant Site T-5 was assumed for Alternatives A and B, while Site T-6 was assumed for Alternative C. The capital costs include interceptors, but do not include the large collection system that is to be built.

As the analysis in Table 2-16 indicates, Alternative B has the lowest present worth capital cost ($6,975,000) and total present worth cost ($8,674,000). Alternative A has the highest costs ($10,617,000 total present worth). This present worth cost summary is required by EPA to identify the least costly project when considering the full 20-year planning period. The Table 2-16 costs, however, do not take into consideration the 15 percent cost preference given by EPA to facilities that qualify as innovative or alternative technology. The land application disposal of Alternatives A and C could qualify for this 15 percent preference. If it does, Alternative C could qualify for federal funding even though the cost analysis does not identify it as the most

TABLE 2-15

ALTERNATIVE PLAN COST SUMMARY
(LOW GROWTH RATE)
IN THOUSANDS OF DOLLARS

1.5 MGD

	ALTERNATIVE (A)		ALTERNATIVE (B)		ALTERNATIVE (C)		
	PHASE I	PHASE II	PHASE I	PHASE II	PHASE I	PHASE II	
CAPITAL[1]	6380	2165	5017	1768	6568	1847	
TREATMENT SITE & RIGHT-OF-WAY[2]	190	-	190	-	129	18	
LAND DISPOSAL SITE[3]	665	332	-	-	630	332	
TOTAL	7235	2497	5207	1768	7327	2197	= 9524
OPERATION AND MAINTENANCE							
TOTAL COST	195	280	209	305	173	228	
LESS INCOME	-18	-27	-	-	-18	-27	
NET COST	177	253	209	305*	155	201	

*WITHOUT PHOSPHORUS REMOVAL = 145

[1] INCLUDES NON-CONSTRUCTION, CONTINGENCY AND INTERCEPTOR AND OUTFALL

[2] 15 ACRES ALTERNATIVES (A) AND (B) AT $10,000/ACRE; 25 ACRES ALTERNATIVE (C) AT $3,500/ACRE FOR PHASE I AND 5 ACRES AT $3,500/ACRE FOR PHASE II

[3] 190 ACRES ALTERNATIVE (A) PHASE I, INCLUDING STORAGE; 90 ACRES ALTERNATIVE (C) PHASE II; 180 ACRES ALTERNATIVE (C) PHASE I AND 90 ACRES PHASE II

SOURCE: LEPARD AND FRAME 1980A.

TABLE 2-16

ALTERNATIVE PLAN EQUIVALENT ANNUAL COSTS

(IN THOUSANDS OF DOLLARS)
(LOW GROWTH RATE)
1.5 MGD

	CAPITAL		SALVAGE VALUE		OPERATION & MAINTENANCE		TOTAL COST	
	PRESENT WORTH	ANNUAL COST[1]	PRESENT WORTH[2]	ANNUAL COST[1]	PRESENT WORTH[3]	ANNUAL COST	PRESENT WORTH	ANNUAL COST
ALTERNATIVE (A) EXTENDED AERATION W/SEASONAL LAND APPLICATION	9732	928	-1248	-119	2133	203	10617	1012
ALTERNATIVE (B) EXTENDED AERATION W/SEASONAL CHEMICAL PHOSPHORUS REMOVAL	6975	665	-830	-79	2529	241	8674	827
PHOSPHORUS INCREMENT	137	13	-14	-1	783	75	906	87
ALTERNATIVE (C) AERATED LAGOON W/SEASONAL LAND APPLICATION	9524	907	-1487	-142	1786	170	9823	935

---

[1] CAPITAL RECOVERY FACTOR AT 7-1/8% AND 20 YEARS = .0953

[2] SINGLE PAYMENT PRESENT WORTH FACTOR AT 7-1/8% AND 20 YEARS = 0.2525 LAND APPRECIATED AT 3%/YEAR, 60% RESIDUAL VALUE INTERCEPTORS AND 40% RESIDUAL VALUE TREATMENT FACILITIES

[3] VARIABLE O&M COST PRESENT WORTH CALCULATED BY USE OF GRADIENT SERIES

SOURCE: LEPARD AND FRAME 1980A.

cost-effective. It should also be noted, however, that the Alternatives A and C cost analyses assumed an irrigation application rate that may not be acceptable to the IDHW. If the application rate was decreased, additional land would be needed and the costs of the two land disposal alternatives would increase. The unknown factors in this cost analysis must be resolved prior to EPA action on Post Falls' requests for additional project funding.

The cost of treatment and disposal facilities and main interceptor are expected to be financed through federal and state grants and sale of local bonds. The size and timing of the grants is yet to be determined, but treatment facilities and interceptors are typically eligible for a 75 percent federal grant under Section 201 of the Clean Water Act, and a 15 percent state grant. The land application facilities (if they are constructed) could be eligible for an additional 4 percent grant from the federal government. The final draft facilities plan (LePard and Frame 1980a, page 7-6) listed the local share of Phase I project costs at $830,600 for Alternative A, $691,700 for Alternative B, and $803,100 for Alternative C. These estimates will be refined before a final facilities plan is adopted.

The cost of the local collection system will be the same regardless of which treatment and disposal alternative is implemented. These cost and funding mechanisms for the collection system are still being developed by LePard and Frame, but the latest estimates indicate the total collection system, including service lines to all houses connected to the system, is expected to cost $6,162,870. The sources of funding are expected to be a state grant, a Farmers Home Administration grant, and a Farmers Home Administration loan to cover the local share of the cost (Kimball pers. comm. a).

The collection system will be constructed in several increments as money is available. The first phase is expected to cost $1,692,000 and will serve 720 dwellings and the main commercial area in central Post Falls (Kimball pers. comm. a).

Cost to Wastewater System Users

The final draft facilities plan included a user fee analysis for Phase I of Alternatives A, B and C (LePard and Frame 1980a). The analysis, however, considered only the local cost of wastewater treatment and disposal facilities and the main interceptor. The cost of constructing a collection system, which is not eligible for federal funding under the Clean Water Act, was excluded. In addition, the elements of the Phase I project have been modified since publication of the final draft facilities plan. Therefore, a complete and up-to-date user fee analysis is not available.

In order to give some indication of how the alternatives compare, the final draft facilities plan indicated monthly user fees would range from $7.10 for Alternative C, to $8.65 for Alternative B. The Alternative A monthly fee was listed as $7.90. This assumed Post Falls would receive a 5 percent loan from the Farmers Home Administration to fund the local share of capital costs and the user fee would be collected from 2,490 equivalent dwelling units (LePard and Frame 1980a). This fee would not cover the cost of the collection system.

Since issuance of the final draft facilities plan, the Phase I treatment facility has been scaled down from 1.2 to 1.0 MGD and other modifications have been made. The size of the first phase collection system has also been reduced. LePard and Frame now expect to serve 720 equivalent dwelling units with the initial collection system. The $50,000 annual operation and maintenance cost for the first phase wastewater system would result in a $5.80 per month charge to the 720 dwelling units. The added user cost necessary to repay bonds for the local share of the treatment and collection system costs will depend on what type of grants and loans are ultimately received. The facilities planners are seeking to keep the user cost under the $12.00 estimated prior to passage of the wastewater system bond issue in Post Falls in November 1979.

If Post Falls fails to construct a central wastewater collection, treatment and disposal system, the existing residents of Post Falls will continue to rely on septic tanks, drainfields and cesspools for wastewater disposal. The existing systems have not required a significant amount of maintenance; septic tanks must be pumped out once every 5 years for a charge of between $75.00 to $100.00 (Kimball pers. comm.). This is equivalent to a monthly cost of between $1.25 and $1.67 for maintenance. There are no costs for operation. New Post Falls residents would be required to install septic tanks and drainfields for about $1,200 rather than paying a fee to hook up to the city collection system. However, new septic tanks could be limited to one per 5 acres if the central treatment system is not constructed and existing PHD regulations for protection of the aquifer are enforced.

Growth Implications

Introduction

The following growth impact analysis considers the facilities planners original population estimates for the Post Falls planning area. This estimate assumed a continuation of the rapid population increases experienced in Post Falls over the last few years. The IDHW, however, has recently indicated that grant funding for wastewater facilities is not available for this large increase in population. The facilities planners have been asked to plan for a 20-year wastewater flow of 1.5 MGD rather than the 2.4 MGD originally envisioned. This growth analysis has not been revised to reflect the fundable population estimate prepared by the Idaho Dept. of Health and Welfare. The impacts of a less rapid population growth rate would be reduced from those described below.

Analysis of Facilities Plan Population Projections

The facilities plan population projections are dependent on certain key assumptions regarding growth. In this section, local population projections are compared, facilities plan population projections are examined, and growth trends and assumptions are evaluated.

Comparison of Local Population Projections. Table 2-17 presents alternative population projections for Kootenai County and the City of Post Falls. As part of the Kootenai County General Plan, population projections were prepared using a straight line (arithmetic) approach, a geometric approach employing increasing growth rates, and a cohort survival approach. In addition, the Idaho Department of Water Resources (IDWR), in conjunction with Boise State University, has prepared projections using a population and employment forecast model. The other county projection in Table 2-17 was developed as part of a county fiscal forecasting project (Seidman and Seidman 1978) and uses an average of arithmetic and geometric projections. The projected average annual growth rates for 1975 to 1985 range from 3.6% to 7.1%.

The City of Post Falls Comprehensive Plan presents a series of population projections based on building permit forecasts, arithmetic projections and geometric projections based on average annual growth rates from 1940 to 1976. Additional projections which have been developed for the city are a straight line projection in the county comprehensive plan and a projection from the fiscal forecasting project. The projected average annual growth rate for 1976 to 1985 range from 4.2% to 6.5%.

Table 2-17. Alternative Population Projections for Kootenai County and the City of Post Falls

Population Projections	1970	1975	1976	1977	1980	1985	1990	2000	Average Annual growth rate 1975-1985
Kootenai County (1970 Census)	35,332								
-County Plan, Straightline		47,863			60,370	72,804	85,337	NA	4.3
-County Plan, Geometric		47,863			65,651	94,251	NA	NA	7.0
-County Plan, Cohort-Survival		47,863			62,763	78,349	NA	NA	5.1
-DWR		40,640			50,140	59,940	67,120	88,120	3.6
-Seidman and Seidman				61,700	77,300	111,300	NA	NA	*8.8
-1980 Census (Preliminary)					58,000				
-Idaho Dept. of Health & Welfare			47,274					101,609	
City of Post Falls (1970 Census)	2,371								
-City Plan, Building Permit***			4,362		5,715	7,406			**6.1
-City Plan, Arithmetic***			4,362		5,234	6,324			**4.2
-City Plan, Geometric***			4,362		5,422	6,748			**5.0
-County Plan, Straightline		4,030			5,684	7,338	8,992		6.2
-Seidman and Seidman			4,600		5,700	8,100			**6.5
-1980 Census (Preliminary)					5,283				
-Idaho Dept. of Health & Welfare			4,402		5,392		7,871	10,344	

Sources: Kootenai County 1976, Tables IIC, IIE.
IDWR 1978.
Seidman and Seidman 1978, Exhibit 7-1.
City of Post Falls 1978.
U. S. Bureau of the Census, pers. comm.
IDHW, pers. comm.

* 1977-1985
** 1976-1985
*** These are "medium" projections; low and high projections using each methodology also appear in the city plan.

Description of EPA-Approved Population Projections for 201 Facilities Plans. Disaggregated statewide projections for Kootenai County were approved by EPA in 1979 and appear in Table 2-17. These IDHW projections are interim projections and are being revised using 1980 census data. The projections show a county population of 47,274 in 1976 and a year 2000 population of 101,609. In the City of Post Falls, the 1976 population is 4,402 and increases to 10,344 by the year 2000. These projections were determined by calculating the 1970-1976 county annual growth rates from available census data and extrapolating to the years 1980, 1990 and 2000 for urban areas. These population projections are to be used by EPA and IDHW in allocating wastewater facilities grant funds under Section 201 of the federal Clean Water Act.

Facility Planning Area Existing Population and Population Projections. The facility planning area includes the City of Post Falls and a portion of the county. In order to determine the existing population in the facility planning area, Le Pard and Frame disaggregated the county population. The number of housing units in the facility planning area was calculated and multiplied by 3.04, the estimated overall rate of persons per dwelling unit in the county. This figure (4,906) was added to the estimated population in the City of Post Falls, which resulted in a total population of 10,736 in 1978 (Kimball pers. comm.).

The Post Falls facilities plan includes separate projections for the facilities planning study area and the Phase I service area. The facilities planning area is projected to increase from 10,736 in 1978 to 26,840 in the year 2000, an increase of 2.5 times. The Phase I service area is projected to increase from 6,272 in 1978 to 9,662 in the year 1982 and to 13,600 in the year 1987.

Comparison of facilities plan population projections with alternative projections is difficult due to inconsistencies in population projection boundaries. Since the facilities planning area includes only a portion of the county, in addition to the City of Post Falls, state (IDHW) projections as well as other projections for the county and cities do not correspond to the facility planning area. Therefore, analysis of the facilities plan population projections must rely on evaluation of the growth assumptions.

Evaluation of Growth Trends, Assumptions and Population Projections. Local population projections involve the systematic extension of statistical trends into the future. This requires assumptions that certain factors which created a particular pattern of population change in the past will continue to have a similar effect on future conditions. This section evaluates recent growth trends, examines present growth conditions and analyzes the impact of different growth assumptions on facility plan population projections.

Recent Growth Trends. As shown in Table 2-18, the Post Falls area has experienced a high rate of population growth in recent years. In general, the recent high growth rates have been a result of regional economic expansion, favorable housing conditions and lifestyle preferences. One important factor has been the financing of low interest loans on new homes by the Farmers Home Administration (FmHA) program. In addition, expansion in lumber and timber operations has created many new employment opportunities.

Although the population of Kootenai County has increased rapidly from 1970, the City of Post Falls has grown even more significantly (Table 2-18). All of the projections in Table 2-18, except those prepared by the facilities planners, indicate that future growth rates for both the county and the city will be much lower than recent growth rates. The growth rates being projected by LePard and Frame for the facilities plan service area are considerably higher than either recent trends or alternative local projections.

Present Growth Conditions. In the past few years, certain changes in growth conditions in the Post Falls region have occurred. Of particular significance is the trend toward decreasing family size. Preliminary data from the 1980 census indicate that 2.5 is the 1980 county-wide average in persons per dwelling unit. This sharply contrasts with the assumed facilities plan estimate of 3.04 persons per dwelling unit. Another important factor influencing recent growth rates is the nationwide economic slowdown. This has severely affected the construction and wood products industry, which provides the economic base of the region. Additionally, the recent discontinuance of the FmHA low interest loan program in Post Falls is expected to adversely impact the local housing market.

Impact of Changes in Growth Assumptions on Population Projections. The impact of recent growth trends on population projections should be viewed in terms of short-term and long-term implications. In most population projections, short-term fluctuations in growth trends are implicit in the assumed growth rate. Only growth factors with long-term implications are thus considered potentially significant to population projections.

The sensitivity of the facilities plan population projections to recent changes in growth conditions is uncertain. From a regional perspective, recent economic developments are short-term, and, to a large degree, relatively insignificant to

Table 2-18. Comparison of Average Annual Growth Rates

Projections	Years	Average Annual Growth Rate, %
Trend		
City of Post Falls	1970-1980*	8.5
Kootenai County	1970-1980*	5.1
Facilities Plan Projections		
Phase I Service Area	1978-1982	11.4
Phase I Service Area	1978-1987	9.0
Facilities Planning Area	1978-2000	4.3
Alternative Local Projections		
City of Post Falls	1976-1985	4.2-6.2
Kootenai County	1975-1985	3.6-7.0
EPA-Approved IDHW Projections		
City of Post Falls	1976-2000	3.6
Kootenai County	1976-2000	3.2

* Based on preliminary 1980 census data.

population projections. At the local level, however, a combination of unfavorable economic conditions has potentially significant long-term impacts on growth trends.

The effect of decreasing family size has important implications on the accuracy of facilities plan population projections. The county estimate of 3.04 persons per dwelling unit is considerably higher than preliminary data from the 1980 census (2.5 persons per dwelling unit). This results in a 9% overstatement of facility planning area population projections. As stated earlier, the IDHW has recently prepared its own estimate of likely population growth in the Post Falls area, taking into account these most recent trends. This state projection will be used to determine the grant eligible size of wastewater facilities for Post Falls.

Growth-Inducing Implications of Post Falls Wastewater Facilities

Wastewater facilities are commonly recognized as a major factor in influencing the timing and location of population growth. Other factors such as local land use plans, water supply and roads may be equally or more important in influencing growth in some situations.

The Post Falls facility planning area has grown rapidly in the 1970s with the expectation that sewers would be installed when housing densities became great enough to finance the sewers. The projected high growth rates for the facilities planning area are predicated on the existence of a sewer system. If sewering plans are not implemented, allowable housing densities for new development would be reduced to one dwelling unit per 5 acres or more, pursuant to PHD regulations. Under these regulations, new development could be priced out of the market in Post Falls unless special provisions for on-site or community wastewater systems were implemented.

In order to evaluate the implications of the Post Falls wastewater facilities on growth, a geographic frame of reference is needed. From the local perspective, the construction of a sewer system for Post Falls can be considered growth-inducing in that projected growth rates, especially in the near-term, would be significantly lower in the absence of a sewer system. The construction of the Post Falls wastewater facilities can thus be seen as the removal of a local constraint to growth. From a regional perspective, however, the Post Falls wastewater facilities should have little effect on the overall rate or amount of growth. If the economic conditions and local aesthetic amenities continue to draw people to the area as they have in the last decade, the absence of adequate wastewater facilities in Post Falls would simply cause people to locate in other communities or unincorporated areas of Kootenai County where a full array of public services are available.

Future Land Use

An important concern of this EIS is how the existing land use conditions will change as a result of future development accommodated by the facilities plan. This section examines the plans and policies which will guide future development and evaluates the expected trend of growth and its impact on future land use.

Land Use Plans and Policies. The four government agencies with the greatest effect on land use policy in the Post Falls planning area are Kootenai County, the City of Post Falls, the Panhandle Area Council and the Panhandle Health District. Land use plans and policies of these agencies are summarized below.

Kootenai County. The Kootenai County Comprehensive Plan was adopted in December 1977 and is currently being updated. The plan includes time-phased population projections and a land capability analysis.

The county plan presents few specific land use policies, but it does contain broad goals and objectives. Several of these goals and objectives encourage the retention of agricultural land in agricultural use; one objective encourages productive agricultural land to be protected by selectively eliminating the availability of public utilities (water and sewer) to agricultural areas. Other plan goals and objectives encourage development within and contiguous to existing urban areas, and encourage planning for water and wastewater facilities to be consistent with anticipated population growth.

The generalized land use plan map appended to the plan incorporates the land use policies of the plan, and is intended to guide land use decisions. This map shows continued growth along the Post Falls-Coeur d'Alene-Hayden L-shaped corridor. The currently vacant land between the Cities of Post Falls and Coeur d'Alene is shown as either urbanized or in an urban "transition area." Agricultural land north of Poleline Road is shown as generally remaining in agricultural use.

City of Post Falls. The City of Post Falls Comprehensive Plan, prepared with the technical assistance of Panhandle Area Council staff, was adopted in January 1979. The Post Falls plan contains time-phased population projections and a land use element with land capability analyses and land use recommendations for eight separate neighborhoods. The area of city impact delineated in the plan does not extend as far east as does the Post Falls facilities planning area.

Policies in the plan relevant to this EIS include the interim sewerage system policy recommendations, which recommend installation of dry sewers until a sewer system is installed, and the continued use by developers of septic tanks and drain fields. Other utility policies in the plan recommend provision of service to existing residents as a higher priority than servicing new developments outside the city. Generally, land use policies in the Post Falls plan encourage growth within the existing urbanizing Post Falls corridor.

The city plan's land use maps, intended to guide land use decisions, are too detailed to be reviewed here. The major uses accommodated by the plan maps are residential and supporting commercial uses; the development of a stronger and more viable central business district is also envisioned.

Panhandle Area Council. The Panhandle Area Council is a voluntary association of local governments, functioning as a regional planning and coordinating agency, within the five counties in the Idaho Panhandle. The Panhandle Area Council is the designated 208 agency for the Rathdrum Prairie aquifer. The initial 208 plan, completed in cooperation with the PHD and the IDHW, sets forth 30 policies for the Rathdrum aquifer, several of which are directly related to land use and growth. These policies encourage growth to locate within designated community service areas or other areas programmed for future sewer service.

Other aquifer protection policies pertain to floodplain and open space areas. Development using on-site systems is discouraged from locating in the 100-year floodway, and development in the 100-year flood "fringe areas" is encouraged only when it can be sewered by centralized sewerage systems. New developments on the aquifer are encouraged to retain the maximum amount of open space in order to enhance groundwater recharge and minimize impacts of urban runoff. Sewer interceptors and treatment plants are encouraged to locate so that agricultural, recreational, or open space lands are not prematurely opened to development; if these facilities must be located through such areas, then prohibition of lateral sewer connections is encouraged.

Panhandle Health District. The PHD has become involved in land use policy in the planning area primarily through its Rules and Regulations Governing Sewage Disposal on the Rathdrum Prairie. The regulations are intended to direct development to areas with current or planned centralized sewerage service in order to protect the Rathdrum Prairie aquifer. Under these regulations, until the new sewer system is completed, on-site systems on parcels less than 5 acres can be installed only within the city limits of Post Falls, or within other areas identified as the Phase 1 service area in the Post Falls facilities plan. This is an agreement between the district and Post Falls.

The PHD's regulations are an outgrowth of 208 planning in the area, and represent a major step forward in protecting the Rathdrum Prairie aquifer from contamination from scattered development using on-site systems. Two factors, however, may operate to limit the immediate achievement of the regulations' intent. First, the regulations do not apply to dwelling units or subdivisions approved or plotted prior to adoption of the regulations; thus, certain developments with less than 5-acre parcels located outside established service areas are currently being "grandfathered in". Second, the regulations allow for development of new subdivisions within approved sewer service areas even though they must rely on septic tank systems as interim waste disposal facilities. This added aquifer pollution is allowed because it is assumed that development density must be increased before central wastewater collection systems can be afforded in some areas.

Land Use Impacts of Growth Accommodated by Wastewater Facilities.

Estimates of Added Urban Acres. In the City of Post Falls, approximately 36% of the land is undeveloped. Most of the undeveloped land is located east of Spokane Street between I-90 and the Spokane River; this land is designated for development in the Post Falls comprehensive plan. In addition, many parcels are scattered throughout the developed part of the city. Within the unincorporated portion of the facility planning area, most of the land is underdeveloped. Significant growth has occurred in the area north and east of Post Falls between Poleline Road, Highway 41 and the Post Falls city boundary.

Table 2-19 presents estimates of added urban acres resulting from added population projected in the Post Falls facilities plan; these estimates were calculated using ratios of existing land absorption in the Post Falls comprehensive plan, and thus assume that future population densities in the planning area will be similar to existing population densities within the city. As shown, by 1982, 1,003 urban acres would be added to the Phase I service area; by 1987, this figure would increase to 2,169 urban acres. Those projections imply that, by 1987,

Table 2-19. Estimates of Added Urban Acres:
Post Falls Facilities Plan Population Projections

Planning Area	Years	Added Population	Added Urban Acres*
Phase I Service Area	1978-1982	3,386	1,003
	1978-1987	7,324	2,169
Facilities Planning Area	1978-2000	16,104	4,768

*Assumes 8.68 persons per residential acre, and 1.57 nonresidential developed acres (e.g., commercial, industrial) for each residential acre.

SOURCES: City of Post Falls Comprehensive Plan (Post Falls, City of, 1978)
Post Falls 201 Facilities Plan (Le Pard and Frame, Inc. 1980)

virtually all the remaining undeveloped land in the City of Post Falls (761 acres) would be urbanized, and that virtually all the Phase I service area (total area equals 2,550 acres) would be urbanized as well. For the facilities planning area, it is projected that, by the year 2000, 4,768 urban acres would be added.

This estimate is subject to certain qualifications. First, it is likely that there will be less commercial and industrial development in the county portion of the facilities planning area than there is in the city. Therefore, using the city plan's land absorption rates for the county portions of the facilities planning area results in a slight overestimate of new urban acres. This overestimate is offset somewhat by the use of family size estimates (3.04 persons per dwelling unit) that are larger than recent census information indicates is occurring (2.5 persons per dwelling unit). If fewer people occupy each new dwelling unit, more dwelling units are needed to accommodate the expected population increase; therefore, more urban acres are needed. The final qualifying factor is that housing densities are assumed to remain the same. This may not actually occur, as there is a trend toward more dense development in order to minimize land costs and costs of providing essential public services. All of these factors should be kept in mind when analyzing the urban acre estimates in Table 2-19.

Consistency of Future Growth with Land Use Plans and Policies. In general, the local land use plans and policies previously reviewed encourage continued growth along the Post Falls-Coeur d'Alene corridor and discourage development of agricultural lands north of Poleline Road. The recent (1979) agreement between the City of Post Falls and the Panhandle Health District that allows on-site sewer systems on only parcels of 5 acres or less unless it is within the sewer management plant boundary, further defines and strengthens local growth policies. The Phase II service area boundary also appears to be supportive of growth policies. However, the rate of growth used for the facilities plan 1982 and 1987 population projections exceeds the rate of growth projected in the City of Post Falls and Kootenai County comprehensive plans, and thus, must be considered inconsistent with local plans.

Potential Impact on Agricultural Lands and Floodplains. In accordance with EPA policy concerning protection of agricultural lands and floodplains from growth-related impacts accommodated by wastewater facilities, this section identifies agricultural lands and floodplains in the Post Falls facility planning area and evaluates the potential impact of growth on these areas.

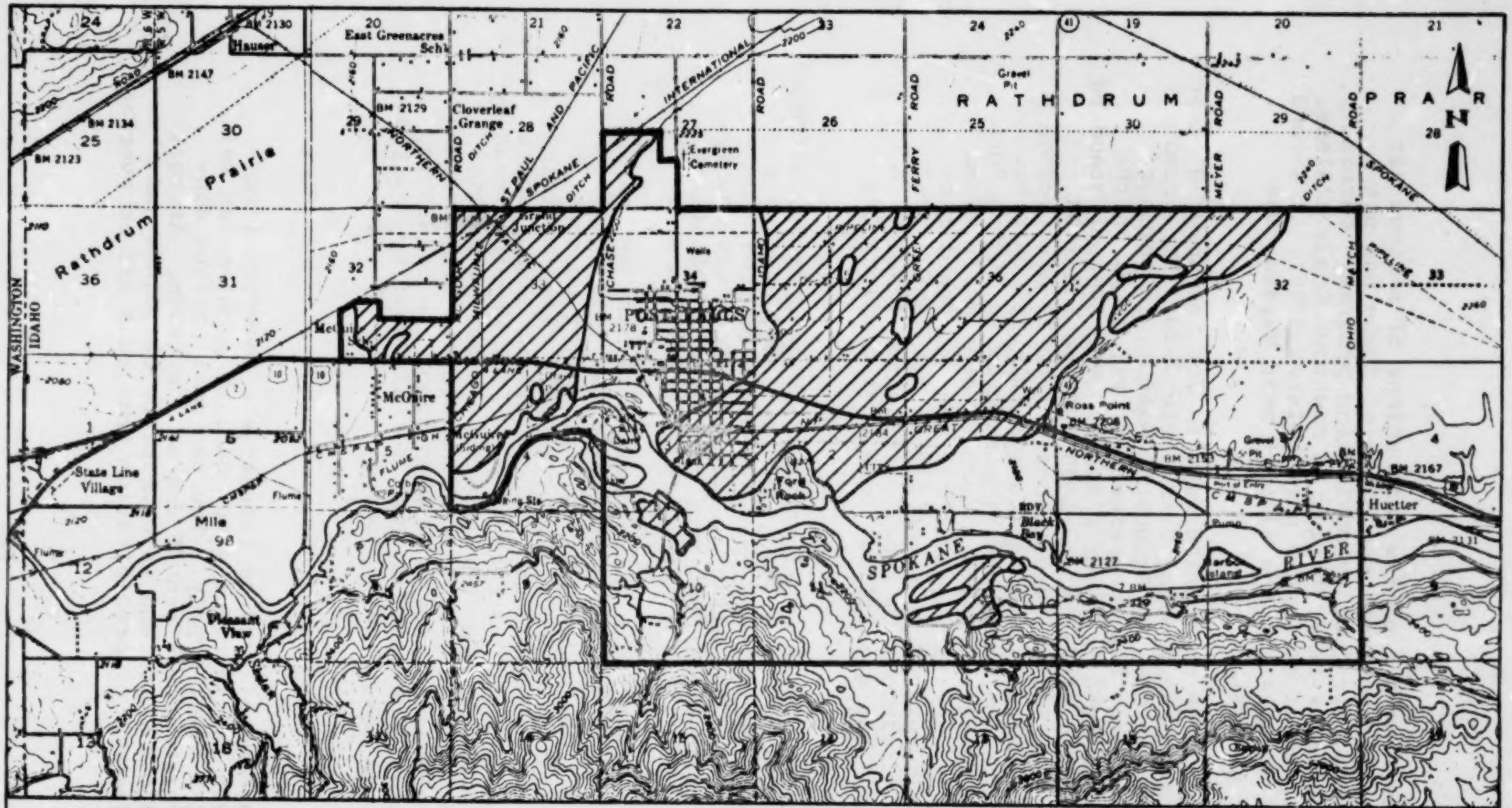
Agricultural Lands. As shown in Figure 2-3, most of the U. S. Soil Conservation Service designated prime agricultural lands in the study area are located north of the Northern Pacific right-of-way which bisects the facility planning area. Prime agricultural land predominates in both an easterly and westerly direction from the city limits. Scattered parcels of prime farmland can be found adjacent to the southern bank of the Spokane River.

Much of the prime agricultural land in the facility planning area is under cultivation with grass seed and alfalfa comprising the main crops. As previously stated, county policies support the protection of agricultural lands in current production. However, scattered residential development can be found throughout many of these areas, a land use which conflicts with the economics of crop production. In addition, since most of this area is designated as "transition" in the Kootenai County land use plan, additional residential development is likely. It appears therefore that continued agricultural use in this area has been precluded by development and that growth accommodated by wastewater facilities will facilitate the conversion of prime agricultural lands to urban uses.

Floodplains. Within the facility planning area, the Spokane River, which bisects the southern portion of the planning area, and the East Greenacres east ditch, which traverses the western border of the City of Post Falls, are potential flood hazard areas. In general, development in the floodplain adjacent to these waterways is discouraged in the Kootenai County comprehensive plan. Special building elevations are required as part of the National Flood Insurance Program. In addition, on-site sewer restrictions in the floodplain "fringe areas" have been supported by the Panhandle Area Council in aquifer protection policies. It does not appear that any significant growth accommodated by the proposed project would locate in the flood hazard areas.

Air Quality

Current Air Quality Conditions. Air quality in the Post Falls area is quite good most of the year. Favorable wind patterns and the relatively low population density of the area combine to create this condition. The only readily apparent air quality problem occurs in late summer when the grass fields on the Rathdrum Prairie are burned after harvest. During this 4-6 week burning period, dense smoke can envelope the urban areas on the edge of the prairie. This includes Post Falls.



BASE MAP: FROM USGS 1:24,000 COEUR d' ALENE, IDAHO & GREENACRES, WASH. QUAD

-LEGEND-

— PLANNING AREA

▨ PRIME AGRICULTURAL LAND (BASED ON DATA FROM U.S. SOIL CONSERVATION SERVICE, PERS. COMM.)

FIGURE 2-3. PRIME AGRICULTURAL LAND IN THE FACILITIES PLANNING AREA

Because there have been few indications of serious air quality problems in the area, the State of Idaho has not established a broad air quality monitoring program. Currently, one monitoring station is operating in downtown Coeur d'Alene. It monitors only total suspended particulates (TSP). A second TSP station has operated at the airport near Hayden, but it is presently closed.

The 1970-1979 TSP monitoring results for the Coeur d'Alene and Hayden stations are presented in Table 2-20. The primary National Ambient Air Quality Standard (NAAQS), in terms of annual geometric mean, has been exceeded only once, in the area. That was in 1976 in Coeur d'Alene. The 24-hour standard has been exceeded 10 times in the 1970-1979 period (IDHW Air Quality Bureau, 1979). Violations of the 24-hour standard have historically been attributed to agricultural burning. There are numerous other sources of particulates in the Post Falls area. Wood-waste burners at area lumber mills, sand and gravel mining operations, construction and demolition operations, woodburning stoves and fireplaces, and street dust are all contributors to local particulate levels. A source inventory that quantifies these contributions has not been developed.

Motor vehicle-related pollutants (carbon monoxide, nitrogen dioxide, hydrocarbons, lead) have not been monitored near Post Falls because it is felt that a vehicle-related air quality problem does not exist. Currently, Kootenai County is classified as an attainment area for all air pollutants under the federal Clean Air Act (Pfander, pers. comm.).

Transportation Planning. To date there has been no comprehensive transportation planning in the Post Falls area. Therefore, there has been no transportation modeling that would give an estimate of daily vehicle miles traveled (VMTs) in and around Post Falls. The State of Idaho Department of Transportation, District 5, plans for physical roadway improvements, but they are concerned only with Interstate 90 and U. S. Highway 95. Traffic volume counts are recorded and highway improvements are made when funds are available, but VMT estimates that could be used for air quality analyses are not developed (Ross, pers. comm.).

Water Quality

The conversion of land to industrial, commercial and residential uses can increase water quality problems as well as problems with water supply. The two most obvious concerns are increased urban runoff and soil erosion. As agricultural or undeveloped land is covered by buildings and pavement, the amount of precipitation that runs off as overland

Table 2-20. Summary of Total Suspended Particulate Measurements in the Post Falls Area, 1970-1979 ($\mu g/m^3$)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Annual Geometric Mean[1]										
Coeur d'Alene	63	65	65	71	71	54	77		58	63
Hayden								52	44	45
Maximum Value[2]										
Coeur d'Alene	382	292	254	270	393	272	190	201	159	174
Hayden								503	370	137

[1] National ambient air quality primary standard is 75 $\mu g/m^3$, secondary standard is 60 $\mu g/m^3$.

[2] National ambient air quality primary standard is 260 $\mu g/m^3$, secondary standard is 150 $\mu g/m^3$.

SOURCE: IDHW Air Quality Bureau, 1979.

flow increases. Oil and grease and the wide variety of chemicals that are used around dwellings are carried in greater quantities into storm drains and surface waters. Where soils have been disturbed during construction, the heavier runoff carries soil and silt with it; this affects both the quality of surface waters and their value as wildlife habitat. Most urban runoff enters storm drains or natural drainageways; it therefore passes untreated into the surface and groundwaters.

Control of urban runoff and erosion has received little attention in the past, mainly because neither has contributed to the wastewater treatment problems of local agencies. Section 208 of the federal Clean Water Act provides the impetus and means for development of plans to control these nonpoint sources of pollution. The 208 planning in the Post Falls-Coeur d'Alene area would therefore be the normal vehicle for this nonpoint pollution control planning. However, the pressing concern for wastewater contamination of the Rathdrum Prairie aquifer has been the first priority, and most of the 208 effort has dealt with on-site wastewater disposal and its effects on the aquifer.

Policy 14 of the 208 water quality management plan, does address nonpoint sources of pollution, however. It states: "New development should be planned, designed, constructed and maintained to involve the minimum feasible amounts of impervious cover as a means of enhancing the retention of open space for aquifer recharge while minimizing the impact of harmful constituents contained in urban stormwater runoff on the aquifer. Oil skimming basins will be required in areas that oil waste products are anticipated. Dry wells should be prohibited at gas stations" (Panhandle Area Council 1978).

This 208 policy along with local land use planning policies can act as the basis for nonpoint pollution control action by local and state agencies with either direct or indirect water quality management responsibility. This includes the City of Post Falls, Kootenai County, the PHD and the IDHW.

The growth-related land use impacts section of this chapter provides estimates of new urban acreage required to accommodate the populations projected in the wastewater facilities plan. That estimate includes 4,768 acres of new urban land, within the 20-year planning period. Development density and percent land coverage have not been estimated, but they are likely to be higher than they are now because sewers will be available and the trend in housing is toward more concentrated development. Increasing urban runoff could therefore become a real threat to water quality both in the Spokane River and the Rathdrum Prairie aquifer if some control actions are not taken in the future.

The 208 plan for Spokane County, Washington, which also overlies the Rathdrum Prairie aquifer, deals in some depth with the types and volumes of nonpoint source pollutants that can be generated by urbanization. Table 2-21 presents areal pollutant loading rates selected as representative of the Spokane area. While the Post Falls urban area is considerably less densely developed than Spokane and has much less industrial development, the pollutant loadings in the table give an indication of the potential for water quality deterioration that can accompany urbanization. The pollutants which are typically contained in urban runoff can become groundwater and surface water contaminants in the Post Falls area unless control measures are adopted. Urban runoff presently goes untreated, the majority percolating through the coarse soils of the area and into the groundwater.

Control and mitigation of growth-related nonpoint source pollutants can be achieved in a variety of ways. The responsibility for identification and implementation of control measures lies with local and state government through ongoing 208 water quality management planning. Continued planning in this regard is encouraged by EPA.

Scarce Resources

Continued rapid growth in the Post Falls area will require additional use and consumption of a variety of scarce natural resources. This includes wood products, sand and gravel and energy supplies. Timberland and sand and gravel are in short supply on a national level but appear to be plentiful in the Post Falls-Coeur d'Alene area. Planned growth in Post Falls will not remove significant timber-producing areas from production and will not hinder access to major sand and gravel deposits. Energy supplies are of greater concern.

According to Washington Water Power Company (WWP), the principal supplier of electricity and natural gas in the area, electrical supplies have been critically short in the past, and promises for an improvement in the near future are not bright. Demand has been increasing by about 5 percent per year but generation capacity is not increasing (Witter pers. comm.). Gas supplies from Canada are adequate but electrical generation has remained fixed in recent years because new projects have been slow to receive approval. Most of the electric supply comes from hydroelectric plants; therefore, in drought years there has been a serious reduction in generation capacity. As a result, WWP has been encouraging use of gas as the major energy source for new development in the Coeur d'Alene-Post Falls area (Pierce pers. comm.). Continued rapid growth in the Post Falls area will place an additional strain on WWP supplies.

Table 2-21. Areal Runoff Loading Rates Selected for Spokane
lbs/acre/year

	Percent of Developed Area	Total Suspended Solids	Total Dissolved Solids	BOD_5	COD	Total Nitrogen	Nitrate-Nitrogen	Total Phosphorus	Ortho-Phosphate	Chloride	Sulfate	Sodium	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Pesticides	Poly Chlorinated Biphenyl[1]	Oil & Grease	Total Coliform[1]	Fecal Coliform[1]	Complex Organics
Open Space		75	10	5	25	1.5	0.4		0.3	0.3			5×10^{-5}	4×10^{-6}		1×10^{-3}		2×10^{-3}					6×10^{9}	3×10^{8}	
Residential	56	400	120	50	200	4.8	1.3	4.1	1.7	4.2			0.006	0.4	0.19	2.9	0.06	0.7					1.6×10^{12}	1.5×10^{11}	
Commercial	34	800	200	70	300	3.5	1.6	2.1	1.0	2.1			0.002	0.2	0.06	1.5	0.02	0.2					3.6×10^{11}	3.7×10^{10}	
Light Industrial	2	800	200	70	400	3.4	0.8	ND	2.0	2.1			0.01	0.42	0.20	0.5	0.06	0.6					1.5×10^{12}	1.1×10^{11}	
Heavy Industrial	8	400	100	40	300	1.8	0.6	ND	1.3	1.4			0.004	0.3	0.11	1.2	0.04	0.3					3.9×10^{11}	8.6×10^{10}	
Weighted Ave[2]		545	150	57	246	4.0	1.3	3.3	1.5	3.2	25	3.0	0.0046	0.40	0.14	2.2	0.04	0.5	0.1	0.4	0.01	12	1.1×10^{12}	1.1×10^{11}	0.45
NWS[3]		500		50	240	4.5	0.6		1.0							0.5		0.6							

[1] Number/acre/year.

[2] Values for Residential, Commercial, Light Industrial and Heavy Industrial weighted by percent of total developed.

[3] Reference 9.

SOURCE: Spokane County, Office of County Engineers 1979.

If growth proceeds within the facilities planning area as predicted in the facilities plan, there will be a 16,100-person increase between 1978 and 2000. Assuming a density of three persons per dwelling unit and an energy demand similar to that of the August 1978 to August 1979 period (14,328 Kwh per customer and 971 therms per customer [Pierce pers. comm.]), the annual demand for electricity will increase by 76,898,000 Kwh and the annual demand for natural gas will increase by 5,211,000 therms.

These potential impacts on energy supplies can be controlled to a degree by initiating simple conservation-oriented planning policies on a local scale. This could include incorporating energy conservation requirements into building codes, publicizing household-oriented energy and resource conservation techniques in schools and through the local media, and conducting local energy education campaigns. Energy fairs and workshops have proven to be valuable in disseminating conservation information that can both reduce demand and save consumers dollars on their utility bills.

Archeological and Historic Resources

Research conducted by the University of Idaho Laboratory of Anthropology indicates that there is little likelihood that continued growth in the Post Falls area will adversely affect known or previously undiscovered archeological or historic resources. A records search of the National Register of Historic Places and the Idaho Historic Survey found no designated or nominated sites in the Post Falls area. Archeological site survey records of the Idaho Archeological Survey list three prehistoric sites near Post Falls, but none is expected to be affected by planned urbanization. Field surveys of areas directly impacted by wastewater facilities construction also failed to turn up previously unrecorded archeological resources.

While the possibility exists that undiscovered archeological resources may still exist within the proposed sewer service area, the existing record does not indicate an abundance of archeological sites. Therefore, it does not appear that mitigation of potential impacts is necessary at this time. The archeological report prepared by the University of Idaho Department of Anthropology is attached as Appendix A. This report has been forwarded to the Idaho State Historic Preservation Office in compliance with Section 106 of the National Historic Preservation Act. A letter from the State Historic Preservation Office indicating no adverse impacts are expected is also contained in Appendix A.

Impacts of Growth on Public Services

In this section the impacts of continued high population growth rates upon key Post Falls public services are assessed. A qualitative assessment of the impacts of growth on the service capabilities of schools, transportation, police and fire, water supply, and recreation is provided.

Schools. The Post Falls planning area is within Post Falls School District 273. District 273 facilities consist of 3 elementary schools, 1 junior high school and 1 senior high school, all located in the City of Post Falls. The enrollment of District 273 in 1978-1979 was 2,719 students, up from 2,531 in 1977-1978 and 2,352 in 1976-1977 (Post Falls School District 273 pers. comm.)

At present, District 273 schools are significantly overcrowded, necessitating double shifts in the junior high school. Seidman and Seidman (1978) find that school area per student is about 50 percent below state standards, and that school officials have had difficulty securing public authorization to raise funds to reduce overcrowding.

In April 1980, a $2.75 million school bond issue was passed which will fund the construction of new facilities. The construction involves 16 more classrooms for the high school, a 12-room addition to Ponderosa Elementary School and 6 classrooms and a multipurpose room for Seltice Elementary. The new facilities are expected to accommodate student enrollment for the next seven years. Until recently, the completion date was set for fall 1981. However, the recent downturn in the bond market has postponed the sale of the bonds, which could delay the completion of the facilities.

Transportation. The major highway passing through the Post Falls planning area is Interstate 90, connecting Post Falls to Spokane on the east and Coeur d'Alene on the west. Street maintenance in the planning area is the responsibility of the Post Falls Street Department and a Kootenai County highway district. Both agencies are considered to have critical needs for new equipment and facilities (Seidman and Seidman 1978). The City of Post Falls road system is in need of maintenance and repair, but these activities are being delayed pending construction of new water and sewer lines.

Several problems related to local traffic congestion, accidents, and access have been identified in the Post Falls general plan. Many of these problems relate to U. S. 10, the main east-west arterial passing through Post Falls. Continued high growth rates in the planning area would require correction of existing problems, construction of additional roads and widening of existing roads as well as increased street maintenance due to increased traffic.

Police and Fire. Police protection in the Post Falls planning area is provided by the County Sheriff and by the Post Falls Police Department. Because of funding limitations, the number of line officers in both departments is considerably below national (FBI) standards on a per capita basis (Seidman and Seidman 1978). The City of Post Falls Fire Department and the Post Falls Rural Fire District No. 4 provide fire protection services which are considered adequate. Continued high growth rates in the facilities planning area would necessitate increased police and fire personnel and facilities.

Water Supply. The City of Post Falls water system is currently at capacity. The engineering firm of Le Pard and Frame recently completed (1979) a water study as part of the development of a water master plan for the city. According to this study, 17 percent of the city's water is being lost somewhere within the municipal water system but exactly where is unknown.

Other problems with the system in addition to inadequate water supplies include insufficiently sized water lines and low water pressure in many locations. Low water pressure presents problems not only to domestic users but also to local fire departments.

A number of solutions have been proposed to improve the system's capacity. They include: development of a new well; installation of water meters; obtaining water supplies from the East Greenacres Irrigation District; and replacing valves and water mains. Some city funds ($143,200) have been earmarked for various projects to upgrade the system (Coeur d'Alene Press 1980). A rate increase earlier this year together with increased hook-up charges are expected to provide additional needed revenues. Continued high growth in the facilities planning area would require construction of additional capacity in the City of Post Falls water supply system.

Recreation. The Post Falls general plan contains a comprehensive analysis of the city's recreational needs. Currently, Post Falls has only 18 acres of city parks. Based on the city's 1978 population estimate of 4,900 and a general national standard of 10 acres of recreational land per thousand residents, the city should have 49 acres of parks. Continued high rates of growth in the facilities planning area would require provision of additional park facilities in addition to correction of existing deficiencies, in order to bring Post Falls up to national recreational standards.

Fiscal Implications

Fiscal Overview. In the Post Falls region, rapid growth is predicted to continue. This growth, which would be accommodated in part by wastewater facilities, will require significant private and public expenditures. In this section, the ability of local public service agencies to pay the future costs of growth is evaluated.

This issue was the subject of a report entitled What Will Growth Cost in Kootenai County? completed in 1978 by the accounting firm of Seidman and Seidman for Kootenai County. The study examined the fiscal impacts of future population growth on the major public services in Kootenai County, Post Falls and Coeur d'Alene and also attempted to assess the fiscal impacts of implementing the Kootenai County general plan. As previously discussed in this EIS, the population projections used in the Seidman and Seidman report have proved to be inaccurately high, thereby overestimating significantly future public service costs.

This analysis does not attempt to recalculate projected public service costs as a result of recent revisions in existing populations. Rather, a general framework is provided for assessing the impacts of growth on the fiscal capability of general purpose governments in Idaho such as Kootenai County and the City of Post Falls. Of particular concern is the effect of the 1978 state referendum (1 percent law) limiting property taxes to one percent of market value.

Public Services and Revenue Sources.

Service Provisions. Within the facility planning area, public services are provided in some cases by the City of Post Falls and Kootenai County and in other cases by special purpose districts. In the City of Post Falls, virtually all public services are provided by the city except for public education which is provided by the school districts. Throughout the county, essentially the opposite is true, with most services provided by special districts.

This variation suggests the difficulties in generalizing about either service provision or cost/revenue issues. Depending on the location of a residence or business, a different package of services from a different set of service providers can result. With many different public agencies involved, each assuming independent service responsibilities and taxing authority, analysis of the public service outlook is difficult.

Revenue Sources. Property taxes have long been the main source of local government finance in Idaho. Historically, property taxes have been used to balance the budget. This dependence has been declining throughout the 1970s, and the 1 percent initiative seems likely to further reduce local agencies' reliance on property tax.

Other taxes may be imposed at local option if authorized by the state legislature. The sales tax, which is a major source of revenues in some other states, provides only a small contribution to local tax coffers, although with state approval, a local sales tax could be added to the state's 3 percent rate. Additional revenue sources include federal and state grants and revenue sharing; fees; fines; reimbursements for services; licenses and permits; interest; rents; and other miscellaneous sources. Bonding, which is commonly used throughout the nation to finance capital facilities, has not been used too extensively in Idaho due to a tradition of pay-as-you-go financing.

Fiscal Outlook. The fiscal outlook for Kootenai County and the City of Post Falls is similar: a sharp decline in the short term in revenues and consequently a need to alter the revenue structure and/or the level of service delivered.

Declining Revenues. Initiative 1, as implemented on an interim basis, has frozen local budgets for a 3-year period at their 1978 levels. With budgets frozen during an inflationary period, the fiscal impact is more severe than simply a frozen budget may suggest. Since the cost of providing public services continues to rise with inflation, the ability of local governments to finance historic levels of service within this budget constraint is seriously jeopardized.

Property taxes are not the only revenues that have declined. With the recent downturn in economic activity, development-related fees have also been reduced. In addition, competition for federal and state assistance has increased.

It should be noted that public services greatly dependent on property tax revenues will likely experience the most severe revenue problems. As shown in Table 2-22, public education in Kootenai County was the largest single service area requiring property tax revenues to offset shortages. The dependence of public education on property tax has in fact been projected by Seidman and Seidman to increase to about 50 percent of revenue requirements in 1985. To partially offset the fiscal plight of school districts, a portion of the state sales tax has been earmarked for public education. In addition to schools, police services and transportation services also impose major revenue requirements on property taxes.

Fiscal Response. In light of current and anticipated declining revenues, virtually all cities and counties in Idaho are taking steps to bring their costs in line with their revenue streams. The following section examines some of the short- and long-term responses.

Table 2-22.

KOOTENAI COUNTY, IDAHO

Property Tax Revenue Requirement by Service Category

($ Thousands)

	----1977----	
		% of Total
Public Education	3,857	35.2
Health & Social Services	391	3.6
General Government	(787)	(7.2)
Transportation	2,214	20.2
Police Protection	1,846	16.9
Water	434	4.0
Fire	825	7.5
Parks	766	7.0
Solid Waste Disposal	685	6.2
Courts & Civil Protection	442	4.0
Sewer	---	---
Community Development	282	2.6
Total	10,955	100.0

Source: Seidman and Seidman 1978.

The most immediate response to fiscal problems is the reduction, to some extent, of costs. This commonly involves reducing personnel costs, eliminating capital facilities expenditures (except to those financed by federal funds) or reducing maintenance expenditures. As a result of these cost reductions, certain sevices are being spread more thinly or discontinued altogether. Likely targets for reduction or elimination in services are those not mandated by state or federal law (e.g., emergency medical services, public transportation).

Unless the 1 percent property tax initiative is overridden in the state legislature, property tax will provide a decreasing proportion of local government revenues as time goes on. Other sources of revenues, such as general obligation bonds, local option taxes and state payments in lieu of taxes, are commonly suggested as alternative sources to property taxes. In addition, increased user charges and growth management fees have been suggested as a means to finance future residential development which does not "pay its own way."

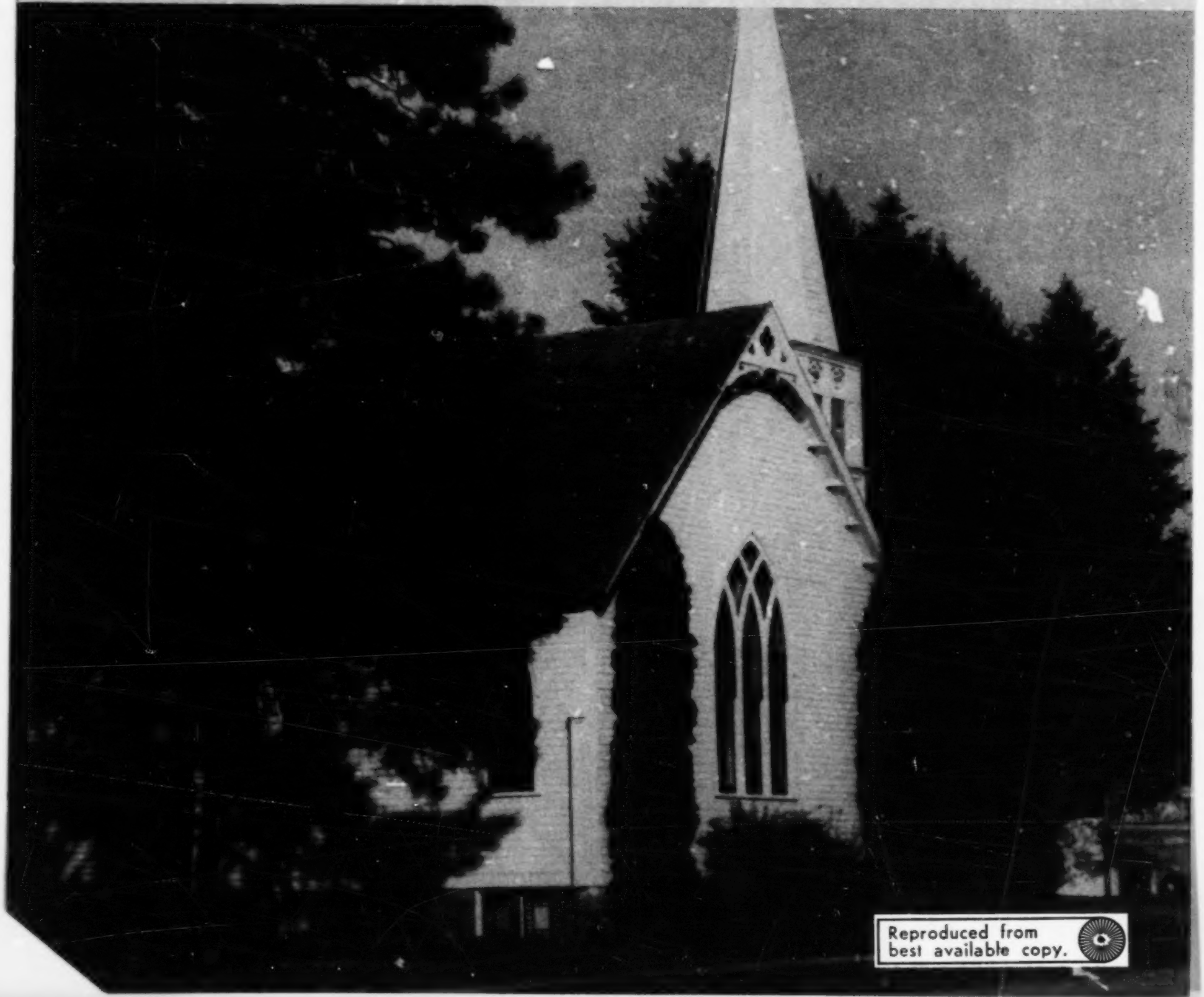
In some cases, a number of services can be (and frequently are) performed by private entities rather than by public agencies. These include solid waste disposal (where an individual hauls his own or contracts a private firm to provide the service) and water (on-site wells or private services). If the costs of providing a public service system thus appear prohibitive, the responsibility could in some cases be passed on to the developer or individual householder.

The benefits of comprehensive land use planning are often associated with a reduction in public service costs. Implementation of certain land use policies can minimize costly extensions of public service networks. Some approaches include: tie new development to existing infrastructure; require infill and contiguous development; approach annexation cautiously; and emphasize development phasing.

Conclusion. Although the preceding analysis examined only the framework by which the fiscal capability of the City of Post Falls and Kootenai County are viewed, it appears that current and anticipated fiscal conditions are resulting in a reassessment of growth and planning policies. Future growth will most likely be concentrated in the more dense urban areas to facilitate efficiency in urban service delivery and to minimize average cost. With anticipated reductions in property tax revenues, other sources will need to be increasingly explored to fill the revenue gap.

CHAPTER 3

COORDINATION



Reproduced from
best available copy.

Chapter 3

COORDINATION

Introduction

This chapter describes the involvement of government agencies, special interest groups and the public in general in determining the scope and content of this EIS. It also describes how, when and where this involvement will continue after issuance of the Draft EIS.

Agency and Public Participation to Date

As noted in the Summary, the Post Falls facilities planning effort was initiated in 1977. LePard and Frame, Inc., the project engineering consultant, established a citizens' steering committee to aid its early planning efforts. This committee, made up of 21 city staff and local residents, met approximately every 3 months from the summer of 1977 to the fall of 1979 to help the city and its engineers develop alternative wastewater facilities plans. The majority of this advisory effort occurred prior to starting the EIS.

On June 27, 1979 EPA Region 10 issued a Notice of Intent to prepare an EIS for both the Post Falls and Coeur d'Alene 201 projects. At that point the projects were to be discussed in a single EIS. It was felt that the two cities' proximity and the similarity of water quality issues would make a single report desirable. This approach was subsequently changed after an initial review of joint wastewater treatment indicated a joint project would have a high initial cost and would be faced with significant institutional roadblocks.

A project scoping meeting was held in Coeur d'Alene, Idaho on June 4, 1979. The meeting notice was sent to 12 individuals and agencies, and was attended by 19 persons. The discussion centered around several key issues: 1) schedule for completion of facilities planning work, 2) alternatives being considered in the Post Falls project, 3) relationship of Hayden and Hayden Lake facilities planning to the Post Falls and Coeur d'Alene work, 4) water quality and algal assay work being done on the Spokane River, 5) scope of public participation for the Post Falls and Coeur d'Alene projects, 6) the need for development and consideration of joint wastewater schemes involving Post Falls and Coeur d'Alene, 7) the need for population projections review by the Idaho Department of Health and Welfare, and 8) the scope of the EIS air quality analysis.

As a result of this scoping process, it was decided that: 1) the Post Falls alternatives could be completely described by the end of June 1979, 2) Post Falls was considering three basic project alternatives, 3) Hayden and Hayden Lake planning efforts would be considered in a separate environmental analysis, 4) the Post Falls and Coeur d'Alene EIS public participation would be combined, 5) the facilities plan engineering firms for Post Falls and Coeur d'Alene would combine efforts to investigate the feasibility of joint wastewater alternatives, and 6) air quality did not appear to be a major environmental issue in the Coeur d'Alene-Post Falls area.

Since the scoping meeting EPA has contacted a wide variety of individuals and agencies to collect background data and define project-related environmental issues. These contacts have been made in person, by phone, and through correspondence. There have been no additional public meetings held in Post Falls for the EIS. The following paragraphs summarize the major influences these coordination efforts have had on the content and scope of the EIS.

Suggestions and Objections Received Through Coordination

In the process of discussing the Post Falls project and collecting background data for the EIS, EPA has received several suggestions and objections that have changed the content and scope of this Draft EIS. The significant suggestions and objections, and the subsequent changes in this EIS, are summarized below.

Alternatives Coverage

LePard and Frame, Inc., the facilities plan engineers, originally investigated five potential sites for a new wastewater treatment plant. After a review of these five sites, the engineers selected Site T-1 as their preferred location. Information for the city's November 1979 wastewater facilities bond election identified T-1 as the selected treatment site. Local opposition to use of this site surfaced in March 1980. Thirty residents and/or property owners of a single family subdivision across Pleasantview Road from Site T-1 signed a letter protesting the proximity of the proposed plant site to the residential area. The letter voiced concerns about increased truck traffic, subsequent commercial or industrial development, decreasing property values, public safety hazards and growth stimuli that might be associated with the plant. The letter is included in Appendix C. In addition, EPA received five letters from local residents voicing similar concerns over use of Site T-1. The letters also indicated concerns over odors and visual detractions. Subsequently, representatives of the City of Post Falls, the Idaho Department of Health and Welfare, and Pleasantview Road homeowners met to further discuss this issue on April 25, 1980.

As a result of these discussions with local residents, the Idaho Department of Health and Welfare requested that LePard and Frame, Inc., investigate other potential plant sites. Three new sites were investigated and have been incorporated into the Draft EIS as Sites T-1A, T-5 and T-6. The environmental concerns of the residents have been discussed in this Draft EIS.

In the early stages of EIS preparation, the Post Falls facilities planners were asked to investigate the feasibility of a joint project with the City of Coeur d'Alene. The City of Post Falls and City of Coeur d'Alene facilities plan engineers prepared a brief economic analysis of a joint alternative. After a discussion of these costs with the two cities and their engineers, EPA decided to drop this joint alternative from further consideration in the Post Falls EIS. High costs and institutional complexities are cited as the reasons for dropping the alternative.

Issues Coverage

The discussion of environmental issues presented in this Draft EIS has been shaped to a large degree by consulting with numerous government agencies and individuals. The scope and content of the surface and groundwater quality impact sections was discussed on numerous occasions with staff of the Idaho Department of Health and Welfare, Division of Environment, the Washington Department of Ecology, the Panhandle Health District, the Idaho Department of Fish and Game, the City of Coeur d'Alene and the City of Post Falls. While specific changes in EIS content cannot be attributed to any individual coordination effort, each discussion had some influence on the content of the water quality analyses. The growth and land use compatibility discussions were strongly influenced by coordination with the City of Post Falls, the Kootenai County Planning Department, the Panhandle Area Council, and the Idaho Department of Health and Welfare.

In order to comply with the requirements of Section 106 of the National Historic Preservation Act, the cultural resources survey contained in this EIS was closely coordinated with the Idaho State Historic Preservation Office (SHPO). The University of Idaho Laboratory of Anthropology, which conducted the survey, contacted the Idaho SHPO both before and after completing its analysis. The early coordination assured that the proper level of investigation occurred. Both a records search and intensive field survey were performed to identify any possible impacts on resources on or eligible for nomination to the National Register of Historic Places. Correspondence with the Idaho SHPO is contained in Appendix A.

The U. S. Fish and Wildlife Service area office in Boise, Idaho was contacted to determine if any wildlife or plant species on the federal threatened or endangered lists were known to occur in the Post Falls facilities planning area. The Fish and Wildlife Service replied that only the endangered bald eagle was known to occur in the area (Gore, pers. comm.). As a result of this exchange, the biological impacts discussion in the EIS was narrowed.

Continuing Coordination Efforts

This Draft EIS has been forwarded to numerous federal, state and local agencies; special interest groups; and private citizens to act as both an informational document and as an avenue to comment on the proposed wastewater project. The distribution list is included as Appendix C. The document has been forwarded to public libraries in the Post Falls area so that other concerned residents can review the potential impacts of the project.

Individuals or groups that wish to comment on the EIS may forward written comments to:

Ms. Norma Young, M/S 443
U. S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

A public hearing to solicit oral comments on the Draft EIS or the wastewater facilities plan will be held by EPA at:

Frederick Post Elementary School
201 W. Mullan Avenue
Post Falls, Idaho

7:30 p.m., Monday , April 6, 1981

All oral and written comments received on the Draft EIS will be recorded and responded to in a Final EIS which will be made available to interested individuals, groups and agencies approximately 2 months after the public hearing.

LIST OF REPORT PREPARERS

U. S. Environmental Protection Agency - Region 10

Elizabeth Corbyn - Chief, Environmental Evaluation Branch; Seattle, Washington.

Area of EIS Responsibility. Coordinates EIS preparation efforts with other EPA Region 10 environmental evaluation functions.

Roger Mochnick - EIS Preparation Coordinator, Environmental Evaluation Branch; Seattle, Washington.

Area of EIS Responsibility. Oversees all EIS preparation efforts for EPA Region 10.

Norma Young - Project Monitor, Environmental Evaluation Branch; Seattle, Washington.

Area of EIS Responsibility. Principal monitor and reviewer of Post Falls Facilities Plan EIS.

Jones & Stokes Associates, Inc., Sacramento, California

Charles R. Hazel - B.S., M.S., and PhD., Fisheries Biology. Formerly with California Department of Fish and Game as Director of Water Pollution Control Laboratory. As Vice-President of Jones & Stokes Associates, Inc., has managed numerous environmental studies and reports and served as expert consultant in fisheries and water quality ecology.

Area of EIS Responsibility. Program management.

Michael D. Rushton - B.A. and M.A., Physical Geography. As staff Environmental Specialist, responsibilities are project management, coordination of EIS preparation team efforts, and compilation of EIS. With Jones & Stokes Associates, Inc., for past 8.5 years preparing and managing preparation of environmental impact analyses.

Area of EIS Responsibility. Project manager; groundwater quality, energy consumption, growth implications, construction disruptions, public health, soils and crops impacts.

Thomas C. Wegge - B.A., Urban Studies; M.S., Environmental Economics. Environmental economist specializing in socio-economic impacts of land use changes, cost-benefit and risk analysis, and energy impact assessment.

Area of EIS Responsibility. Land use, growth implications.

Mark D. Cudney - B.S., Zoology; M.S., Aquatic Ecology. Staff biologist with previous EIS preparation experience, including fisheries and water quality analysis.

Area of EIS Responsibility. Surface water quality, fisheries, beneficial river uses.

Albert Herson - B.A., and M.A., Psychology, M.A., Urban Planning. As staff environmental planner, responsibilities are project management and preparation of planning studies, specializing in land use planning, growth policy, and public service systems. Formerly water quality planner for Southern California Association of Governments. Member, American Institute of Certified Planners (AICP).

Area of EIS Responsibility. Land use, growth implications.

Jeffrey D. Civian - B.S., Renewable Natural Resources. Environmental specialist experienced in air quality and noise analyses with emphasis on line source modeling and emission forecast development.

Area of EIS Responsibility. Air quality impact analysis.

Patricia S. French - B.A., French; M.L.S., Library and Information Studies. Staff librarian responsible for acquisition and organization of reference documents. Conducts literature studies and compiles bibliographies, and assists in technical editing.

Area of EIS Responsibility. Preparation of reference listing and index.

Culp-Wesner-Culp, Santa Ana, California

Robert Gumerman - B.S., Civil Engineering; M.S. and PhD., Sanitary Engineering. Registered engineer with 10 years of experience in sanitary engineering; 6 years of experience reviewing wastewater facilities plans and project cost analyses as part of EIS preparation team.

Area of EIS Responsibility. Facilities plan review, project costs, project description.

H. Esmaili & Associates, Inc., Berkeley, California

Houshang Esmaili. B.S., Agricultural Engineering; M.S., Irrigation Science, Dr. Eng., Water Resources Engineering. Twelve years experience as a consulting civil and agricultural engineer. As president of H. Esmaili & Associates, Inc., has supervised the conduct of over 20 engineering projects and environmental studies.

Area of EIS Responsiblity. Review of facilities plan land application analysis.

G-ological Drafting Service, Sacramento, California

Steve Fleming. Extensive experience preparing maps, charts, and illustrations for technical reports and documents. Additional experience preparing cartoons and illustrations for various reports and publications.

Area of EIS Responsiblity. Report graphics.

University of Idaho Laboratory of Anthropology,
Moscow, Idaho

Ruthann Knudson. PhD., Anthropology (emphasis, archeology). Research management archeologist for University of Idaho Laboratory of Anthropology with 16 years experience as professional archeologist. Has managed and participated in numerous cultural resource assessments, including literature searches and field surveys.

Area of EIS Responsibility. Managed cultural resources assessment and conducted background research.

John Moore. B.A., Anthropology (emphasis archeology). Graduate student in anthropology at the University of Idaho. Five years of experience in field archeology.

Area of EIS Responsibility. Archeological field reconnaissance.

Darby Stapp. B.A., Anthropology. Graduate student in anthropology at the University of Idaho. Three years of experience in field archeology.

Area of EIS Responsiblity. Archeological field reconnaissance.

ACRONYMS AND ABBREVIATIONS

BOD - Biochemical oxygen demand
$CaCo_3$ - Calcium carbonate
CWA - Clean Water Act
EIS - Environmental Impact Statement
EPA - U. S. Environmental Protection Agency
FIA - U. S. Federal Insurance Administration
FmHA - Farmers Home Administration
HUD - U. S. Department of Housing and Urban Development
IDHW - Idaho Department of Health and Welfare
IDWR - Idaho Department of Water Resources
MCL - maximum contamination level
mg/l - milligrams per liter
mmhos/cm - millimhos per centimeter
MPN - most probable number
N - nitrogen
NAAQS - National Ambient Air Quality Standards
NEPA - National Environmental Policy Act
NO_3 - nitrate
NPDES - National Pollutant Discharge Elimination System
NIPDWR - National Interim Primary Drinking Water Regulations
P - phosphorus
PAC - Panhandle Area Council
PHD - Panhandle Health District I
ppb - parts per billion
Q_{7-15} - lowest 7-day average flow condition reported over 15 years of record
RCRA - Resource Conservation and Recovery Act
SDWA - Safe Drinking Water Act
SMP - sewer management plan
SS - suspended solids
TSP - total suspended particulates
USGS - U. S. Geological Survey
USSCS - U. S. Soil Conservation Service

Preceding page blank

WWP - Washington Water Power Company

WWTP - wastewater treatment plant

96 TLM - 96-hour tolerance limit median

$\mu g/m^3$ - micrograms per cubic meter

BIBLIOGRAPHY

References Cited

Ayers, R. S. 1977. Quality of water for irrigation. J. Irrigation and Drainage Division, American Society of Civil Engineers 103(1Rs):135-154.

Burd, R. 1980. see Personal Communications Section.

Coeur d'Alene Press. 1980. Water system advances outlined. Articles by Robert Frank, printed April 9, 1980.

Drost, B. W., and H. R. Seitz. 1978. Spokane Valley-Rathdrum Prairie aquifer, Washington and Idaho. U.S. Geological Survey Open-file Rep. 77-829. 79 pp. + plates.

Esvelt, L. A. 1978. Spokane aquifer cause and effect report: summary report of '208' water quality results and cause and effect relationships for water quality in the Spokane-Rathdrum aquifer. Prepared for Spokane County, Office of County Engineer. 36 pp. + appendices.

Flagg, N. G., and G. W. Reid. 1954. Effects of nitrogenous compounds on stream conditions. Sewage Indust. Wastes 26(9): 1145-1154.

Funk, W. H., et al. 1975. An integrated study on the impact of metallic trace element pollution in the Coeur d'Alene-Spokane River-Lake drainage system. Project completion report to Office of Water Research and Technology, U.S. Dept. of the Interior. 332 pp.

Green, J. C., R. A. Soltero, W. E. Miller, A. F. Gasperino, and T. Shiroyama. 1975. The relationship of laboratory algal assays to measurements of indigenous phytoplankton in Long Lake, Washington, a biostimulation and nutrient assessment. Utah State University.

Holcombe, G., and D. A. Benoit. National Environmental Research Laboratory, Duluth, MN. Unpublished data.

Hynes, H. B. N. 1970. The ecology of running waters. University of Toronto Press. 335 pp.

Idaho. Dept. of Health and Welfare. 1979. Idaho ambient air profile. Prepared by Air Quality Bureau, Boise, ID. 28 pp. + appendices.

Idaho. Dept. of Water Resources. 1978. Population and employment forecast, State of Idaho series 2: projections 1975-2000. Prepared with Boise State University.

__________. 1979. Well log data. Unpublished data available in Coeur d'Alene office.

Kootenai County. 1974. Official zoning map.

__________. 1976. Kootenai County comprehensive plan.

LePard and Frame, Inc. 1980. Draft City of Post Falls step 1 201 facilities plan. Prepared for the City of Post Falls.

__________. 1980a. Final draft City of Post Falls step 1 201 facilities plan. Prepared for the City of Post Falls.

Lider, E. C. Bailey, and D. Koch. 1980. Algal growth potentials in the Truckee River, Lahontan Reservoir and Pyramid Lake, Nevada. Bioresources Center, Desert Research Institute, University of Nevada, Reno. 47 pp.

MacKenthun, K. M. 1965. Nitrogen and phosphorus in water: an annotated selected bibliography of their biological effects. U.S. Dept. of Health and Welfare. 111 pp.

MacKenthun, K. M., L. A. Lueschow, and C. D. McNabb. 1960. A study of the effects of diverting the effluent from sewage treatment upon the receiving stream. Trans. Wisconsin Acad. Arts, Sciences and Letters 49:51-72.

MacKenthun, K. M., and W. M. Ingram. 1967. Biological associated problems in freshwater environments: their identification, investigation, and control. U.S. Dept. of the Interior, Federal Water Pollution Control Administration. 287 pp.

Maloney, T. E., and C. M. Palmer. 1956. Toxicity of six chemical compounds to thirty cultures of algae. Water Sewage Works 103:509-513.

Muller, W. 1953. Nitrogen content and pollution of streams. Gesundheitsing 74:256; Water Pollution Abstracts 28(2):454.

National Academy of Sciences. 1972. Water quality criteria: a report of the Committee on Water Quality Criteria. 594 pp.

Pacific Environmental Laboratories. 1978. Effects of the Reno-Sparks joint water pollution control plant on water quality of the Truckee River. Prepared for the Cities of Reno and Sparks. 47 pp.

Panhandle Area Council. 1978. Water quality management plan: Rathdrum aquifer. Prepared with Panhandle Health District I and the Idaho Dept. of Health and Welfare.

Panhandle Health District I. 1977. Groundwater quality monitoring, Rathdrum Prairie aquifer: technical report.

__________. 1977a. Kootenai County shoreline survey report: technical report.

Post Falls (City). 1978. Post Falls comprehensive plan.

__________. 1979. Zoning ordinance.

Reid, R. R. 1961. Guidebook to the geology of the Coeur d'Alene mining district. Idaho Bureau of Mines and Geology Bull. 16.

Seidman and Seidman. 1978. What will growth cost the taxpayers of Kootenai County? final management summary report. Spokane, WA. 32 pp.

Soltero, R. A., _et al_. 1975. Response of the Spokane River periphyton community to primary sewage effluent and continued investigation of Long Lake. Washington Dept. of Ecology. 117 pp.

Soltero, R. A., D. M. Kruger, A. F. Gasperino, J. G. Griffin, _et al_. 1976. Continued investigation of eutrophication in Long Lake, Washington: verification data for Long Lake model: project completion report. Washington Dept. of Ecology. 64 pp.

Spokane County Office of County Engineers. 1979. The relative contaminant contributions of domestic waste and urban runoff. Unpublished task report for the Spokane County 208 water quality management program.

Thurston, R. V., R. C. Russo, C. M. Fetterolf, Jr., T. A. Edsall, and Y. M. Barber, Jr., eds. 1979. A review of the EPA red book: quality criteria for water. Water Quality Section, American Fisheries Society, Bethesda, MD. 313 pp.

U.S. Army Corps of Engineers. 1976. Metropolitan Spokane region water resources study, appendix E: environment and recreation. Seattle.

U.S. Dept. of Housing and Urban Development, Federal Insurance Administration. 1980. Preliminary flood insurance rate map, Kootenai County, ID, community panel no. 160076 0155A.

U.S. Environmental Protection Agency. 1976. Quality criteria for water. 256 pp.

__________. 1978. Idaho environmental quality profile.

U.S. Geological Survey. 1965-1979. Water resources data for Washington and Idaho.

Vollenweider, R. A. 1968. Scientific fundamentals of the eutrophication of lakes and flowing waters with particular reference to nitrogen and phosphorus as factors in eutrophication. Organization of Economic Cooperation and Development. 159 pp.

Walker, W., J. Bouma, D. Kenney, and P. Olcott. 1973. Nitrogen transformations during subsurface disposal of septic tank effluent in sands, II: groundwater quality. Environ. Quality 2(4):521-525.

Wallace, A. T. 1979. A proposed methodology for applying the antidegradation criterion to the Rathdrum Prairie aquifer. Prepared for the City of Post Falls in cooperation with LePard and Frame.

Wetzel, R. G. 1975. Limnology. W. B. Saunders Company. 743 pp.

Willingham, W. 1976. Ammonia toxicity. U.S. Environmental Protection Agency. EPA 908/3-76-001. 19 pp.

Personal Communications

Beck, L. November 1979. U.S. Agricultural Stabilization and Conservation Service, Coeur d'Alene. Telephone conversation.

Burd, Robert. March 23, 1979. U.S. Environmental Protection Agency, Seattle. Letter to Steve Tanner, Panhandle Health District.

_________a. August 6, 1980. Letter to Bruce Thompson, Panhandle Area Council.

Clegg, P. August 8, 1980. Sergeant, Kootenai County Sheriffs Dept., Coeur d'Alene. Telephone conversation.

Coony, Mike. July 23, 1980. Idaho Dept. of Health and Welfare, Coeur d'Alene. Personal interview.

Eachon, R. August 8, 1980. Supervisor, Tri-County Parks and Waterways Maintenance, Coeur d'Alene. Telephone conversation.

Funk, W. September 1980. Professor of Fisheries, Washington State University, Pullman. Telephone conversation.

Goodnight, W. October 1979. Idaho Dept. of Fish and Game, Coeur d'Alene. Telephone conversation.

Gore, James F. March 21, 1979. U.S. Fish and Wildlife Service, Boise, ID. Letter to Jones & Stokes Associates.

Idaho Dept. of Health and Welfare. January 15, 1980. Written communication from Al Murray to Robert Burd, U.S. Environmental Protection Agency.

Kimball, J. July 30, 1980. LePard and Frame, Coeur d'Alene. Telephone conversation.

_________a. December 18, 1980. Letter to J. Michels, Idaho First National Bank.

Lee, T. September 1979. Owner, Lee's Outdoor Outfitters, Coeur d'Alene. Telephone conversation.

LePard and Frame, Inc. August 8, 1980. Letter from Jim Kimball to Michael Rushton, Jones & Stokes Associates, Inc.

Miller, M. October 1979. Instructor, North Idaho College, Coeur d'Alene. Telephone conversation.

Mitchell, B. August 1, 1980. Graduate student, University of Idaho, Moscow. Telephone conversation.

Morris, R. November 1979. Member, Northwest Whitewater Kayak Association, Coeur d'Alene. Telephone conversation.

Mossman, W. November 1979. Member, Northwest Whitewater Kayak Association, Coeur d'Alene. Telephone conversation.

O'Hallaran, F. September 1979. Kayaker, Coeur d'Alene. Telephone conversation.

Pfander, John. December 4, 1979. U.S. Environmental Protection Agency, Idaho Region Operations Office, Boise. Telephone conversation.

Pierce, Jack. September 27, 1979. Washington Water Power Company, Coeur d'Alene. Personal interview.

Post Falls School District. September 27, 1979. Telephone conversation.

Ross, J. October 20, 1980. Idaho Dept. of Transportation, Coeur d'Alene. Telephone conversation.

Soltero, Raymond. December 1980. Professor of Biology, Eastern Washington University, Cheney. Telephone conversation.

Sturts, S. September 1979. Member, National Audubon Society, Coeur d'Alene. Telephone conversation.

U.S. Bureau of the Census. July 1980. Telephone conversation with Ruby Sutton, Lewiston, ID, office.

U.S. Soil Conservation Service. July 24, 1980. Listing of prime and borderline prime soils obtained from Coeur d'Alene office.

_________a. July 24, 1980. Unpublished soil series descriptions obtained from Coeur d'Alene office.

Witter, Stan. October 26, 1979. Washington Water Power Company, Spokane. Telephone conversation.

148.a

APPENDICES

Reproduced from
best available copy.

Appendix A

HISTORIC AND ARCHEOLOGICAL RESOURCES REPORTS, UNIVERISTY OF IDAHO LABORATORY OF ANTHROPOLOGY, AND ATTENDANT CORRESPONDENCE

Letter Report No. 79 -11

University of Idaho
Laboratory of Anthropology
Department of Sociology/Anthropology
Moscow, Idaho 83843

5 November 1979

Dr. Charles Hazel
Jones & Stokes Associates, Inc.
2321 P Street
Sacramento, CA 95816

RE: Post Falls, Idaho, Wastewater Facilities Plan

Dear Dr. Hazel:

This letter is a report on our archaeological and historical resources assessment of the impact of the proposed wastewater treatment facility for Post Falls, Idaho. Our assessment is based on a search of existing archaeological and historic survey records, the literature, and a field reconnaissance of the project area.

I have done most of the background research on this matter; I serve as Research Management Archaeologist for our Laboratory, hold a Ph.D. in anthropology (emphasis archaeology) from Washington State University [1973] and have undergraduate and graduate minors in history, have been doing cultural resource management for five years and professional archaeology for 16 years, and am a member of the Society of Professional Archaeologists. The archaeological field reconnaissance was completed on 28-29 October 1979 by Darby Stapp and John Moore, both research technicians in our Laboratory. Stapp has a Bachelor's in anthropology from the University of Denver, two years of graduate work in anthropology (emphasis archaeology) from the University of Idaho, and three years experience in field archaeology. Moore has a Bachelor's and two years of graduate work in anthropology (emphasis archaeology) from the University of Idaho and five years experience in field archaeology. Both Moore and Stapp have been involved in both prehistoric and historic archaeology, as have I.

Our research indicates that there is only one presently identifiable prehistoric or historic resource of significance within your project area that would be adversely impacted by that project either directly or indirectly, though the indirect impacts are less easy to judge based on the slim record. In order to reach this conclusion we have searched the records of the Idaho Archaeological Survey (through lists of both known sites and those locations thought to have high potential for sites based on some literary or folk reference), the Idaho Historic Survey, and the National Register of Historic Places (including a telephone conversation with Larry Jones of the Idaho State Historic Preservation Office who informs us that no sites in process of eligibility determination or nomination would be affected), and completed a field reconnaissance of the project areas. Of these three sites, 10-KA-13 had been identified in the early 1950's when no precise locational records were maintained; 10-KA-44 was first identified in the mid-1960's as a rock art site and was recently re-recorded by the Survey; and potential site Kootenai 1 was identified by Verne Ray ("Native villages and groupings of the Columbia Basin," Pacific Northwest Quarterly 27:132 (1939) as his Coeur d'Alene site 30:

> q'ami˙l n ("water falling into a mouth [pothole]")
> A small camp, numbering perhaps fifteen people, at Post Falls on the Spokane River.

No Post Falls sites were listed in the Idaho Historic Survey, or on or in process of nomination to the National Register of Historic Places.

In addition to the records search Stapp and Moore spent two days in the project area, searching the surface of the S,T,I, and O, areas (as identified on the map provided to us by your office, and reproduced in the attachment ot this letter report) as well as the areas of potential growth around Post Falls. Their survey was a pedestrian reconnaissance of each area, the two individuals being spaced approximately 40m apart to complete 3-4 swaths across each disposal site. The treatment sites were reviewed more intensively, and all interceptor lines were walked. A fuller report of survey methods, local conditions, and activities is on file in the Laboratory for any further reference. As a result of this survey no previously unrecorded archaeological or historic sites were noted in the areas of direct project impact, and the amount of modern disturbance in the Phases I and II growth areas suggests that there is no high probability of undisturbed cultural resources being remnant there. That is not to say some may not be found, especially along the river (e.g., rock art sites) but the probability is not high enough to mitigate against support for development of the wastewater facilities.

Stapp and Moore did go in search of the previously identified archaeological sites 10-KA-13, 10-KA-44, and Kootenai 1. Site 10-KA-13 does not have much information on record about its original location, and it could not be relocated; if it was not destroyed earlier it probably was during construction of the interstate highway east of Post Falls. Potential site Kootenai 1 as noted by Ray also did not have precise locational data and could not be field-verified; it was somewhere in the vicinity of Post Falls and was probably destroyed by the development of the modern community there. Site 10-KA-44, a rock art panel near the Falls, does indeed exist today and is presently protected by a wood and screen structure in front of it. That site appears from your map to be slightly to the west of your proposed treatment plant site T-4, but in enough proximity that it be avoided in the development of any facilities plan. Though the rock art at 10-KA-44 has an overlay of modern additions, it does include both prehistoric and historic markings and appears eligible for nomination to the National Register of Historic Places. A copy of the site form is attached to this report for your information; we recommend that this form not be included in the publically available Environmental Impact Statement To preserve the confidentiality of the locational information in it (in compliance with Sec. 9(a) of P.L. 95-96, recently promulgated). There is also a chance that there is more rock art on the river canyon wall just below your site T-4, but Stapp and Moore could not gain access to that area and did not have a chance to look it over in detail.

In conclusion, we found little evidence that construction of any of the alternative parts of the proposed Post Falls Wastewater Treatment Facilities would adversely impact the cultural resources of the area either directly or indirectly, except for the vicinity of T-4. There is also little evidence that urban growth in the area would be an adverse impact, since there is already intense modern disturbance around Post Falls and this had undoubtedly already resulted in the destruction of much of the archaeological resource base there.

If you have further questions about this project, please call on us; if you need to check our project records further they are on file in our office for your inspection. Thank you for coming to us for assistance on this project, and we hope to work with you again

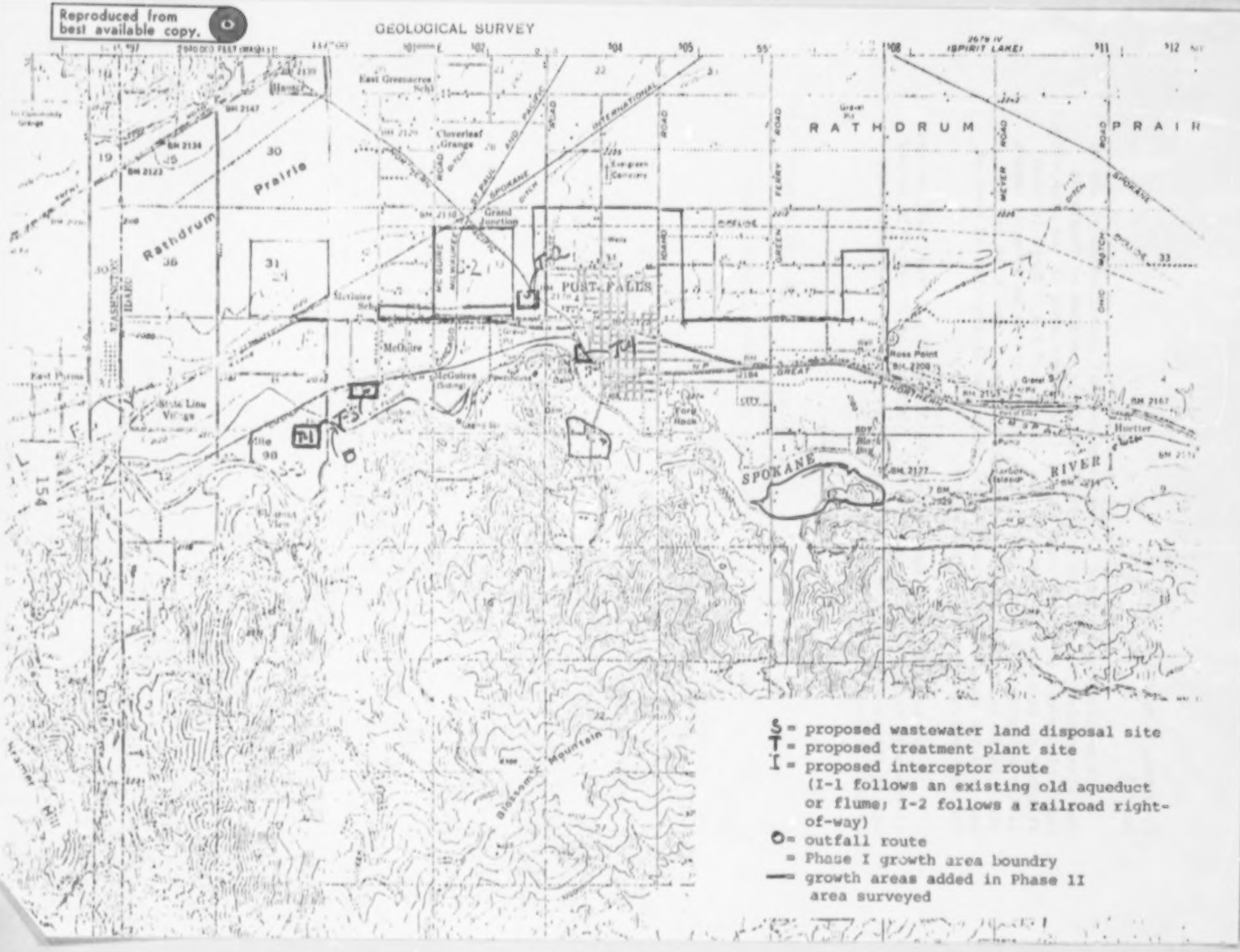
Sincerely

Ruthann Knudson CKF

Ruthann Knudson, Ph.D.
Resource Management Archaeologist

Encl.
cc: Dr. Merle Wells, Idaho SHPO

Reproduced from best available copy.



THE OFFICIAL REPORT CONTAINS

CONFIDENTIAL SITE SURVEY FORMS

(These have not been included
for general public distribution)

Letter Report No. 80-6

University of Idaho
Laboratory of Anthropology
Department of Sociology/Anthropology
Moscow, Idaho 83843

3 September 1980

Dr. Charles Hazel
Jones & Stokes Associates, Inc.
2321 P Street
Sacramento, CA 95816

RE: Supplemental Cultural Resources
Reconnaissance, Post Fall, Idaho,
Wastewater Facilities

Dear Dr. Hazel:

This letter is a report of our supplemental archaeological and historical resources assessment of the impact of the proposed wastewater treatment facility for Post Falls, Idaho. During this addition work we dealt with parcels T-1A, T-5, and T-6 of the proposed project. As with the earlier study, our present assessment is based on a search of the existing archaeological and historic survey records, the literature, and a field reconnaissance of the three parcels.

Before initiating further field reconnaissance of this project area, we again reviewed the records of the Idaho Archaeological Survey to ascertain that there were no previously recorded sites within the parcels under consideration. We also reviewed the Idaho Historic Inventory and the National Register of Historic Places, and the list of properties determined eligilble for the Register or under consideration for nomination or eligibility; no historic properties have been identified in the study parcels. For this background review we consulted the records here in the Northern Idaho Regional Archaeological Center, Laboratory of Anthropology, University of Idaho; we have been designated by the Idaho State Historic Preservation Office as managers of these records for northern Idaho, hence we had no need to consult the ISHPO office in Boise.

Subsequent to a review of known historic property records, and again a search of the literature to find out if any information on the Post Fall area had become available since we submitted Letter Report No. 79-11, we conducted a field reconnaissance of the study parcels. A copy of the survey record is attached, for your records. No prehistoric or historic archaeological or architectural materials were encountered in any of these study areas, and there is no information indicating that they are significant to American Indian religious beliefs. Thus, there is no need for further management consideration of historic values in these areas unless buried archaeological materials are encountered during project construction.

If you have further questions about this project, please call on us. We are glad to have been able to be of service again, and hope to work with you in the future.

Sincerely,

Ruthann Knudson
Resource Management Archaeologist

Encl.

The University of Idaho is an Equal Opportunity/Affirmative Action Employer and Educational Institution.

cc: Tom Green

7 August 1980

Ruthann Knudson
Laboratory of Anthropology
Department of Sociology/
Anthropology
University of Idaho

re: Post Falls, Idaho,
wastewater treatment sites

Ruthann,

On August 6, 1980, Michael A. Pfeiffer and I conducted a systematic archaeological survey of the proposed wastewater treatment sites for Post Falls, Idaho. These three parcels of land are designated T-1A, T-5, and T-6 on the map of the project area provided by Jones and Stokes Associates, Inc. No cultural resources were found.

The three project sites are located west of the city of Post Falls, and east of the Idaho-Washington state line. Parcel T-1A consists of approximately 20 acres (8 ha) located in the SE1/4SW1/4 and the SW1/4 SE1/4 of Section 6, and in the NW1/4NE1/4 and NE1/4NW1/4 of Section 7, T.50N., R.5E., B.M. Parcel T-5 is approximately 40 acres (17 ha) located in the NE1/4NW1/4 of Section 4, T.50N., R.5W., B.M. Parcel T-6 consists of about 60 acres (24 ha) located in the SE1/4SW1/4 of Section 31, T.51N., R.5W., and N1/2NW1/4 of Section 6, T.50N., R.5W., B.M. (Maps 1 and 2).

The project parcels are located in the Spokane River valley, approximately 1-2 miles (2-3 km) north of the river. Soils consist of thin, sandy and silty loams developed in and over coarse sand and gravels, deposited by post-glacial floodwaters. A gravel pit adjacent to parcel T-6 exposes sand and gravel deposits to a depth of at least three meters (this stratigraphy is typical of the area, as can be seen in sand pits near Coeur d'Alene, six miles (10 km) to the east). In general, vegetation in the area consists of ponderosa pine and various forbes and grasses. Most of the vicinity is under cultivation, including parcels T-1A and T-5. Visibility at these two parcels was extremely poor due to a thick mat of grass covering the soil from recent cuttings of the fields. Numerous granitic boulders present in parcel T-6 precludes much of the area from cultivation. In this area, vegetative cover consists of widely scattered forbes and grasses, leaving much of the ground surface exposed. The northeastern portion of parcel T-6 is under cultivation in wheat, providing extremely poor ground visibility.

A pedestrian, systematic, partial survey of the three parcels, was designed to examine the majority of the exposed soils at the sites. In parcels T-1A and T-5, this consisted of concentrating on the examination of turnrows and embankments, providing approximately 1 % coverage of the areas. In parcel T-6, approximately 15% of the total area was examined by making east-west and north-south, on-foot transects across the area at intervals of approximately 10 meters (within the non-cultivated area). No significant cultural resources were found. A total of 2.5 person days were expended on this project: 2 in the field and .5 in report preparation.

Sincerely,

Daniel M. Mattson

Daniel M. Mattson

CULTURAL RESOURCE RECONNAISSANCE RECOR
Laboratory of Anthropology
University of Idaho, Moscow [11/79]

PROJECT Post Falls, Idaho wastewater treatment sites
SURVEYORS Daniel M. Mattson/Michael B. Pfeiffer

RECORDER Daniel M. Mattson
DATE(S) August 26, 1980

IDENTIFIED SITES N/A

SURVEY PURPOSE Pedestrian survey of proposed wastewater treatment sites

SPONSOR Jones and Stokes Associates, Inc. to University of Idaho Lab Anthro

STUDY LOCALITY [verbal desc.] the project area consists of three parcels of land located west of the city of Post Falls, Idaho, and east of the Washington-Idaho state line. The parcels are labeled T-1A, T-5, and T-6 on the attached map.

USGS MAP(S) [title, scale, date] Coeur d'Alene, Idaho 15' 1957
Greenacres, Washington-Idaho 15' 1949

AERIAL PHOTO(S) [flight no., date, scale] N/A

SPECIFIC LOCATION [of area, or boundaries to the cardinal directions]:

a. LEGAL T-1A: SE¼SW¼ and SW¼SE¼ of Section 6, and NW¼NE¼ and NE¼NW¼ of Section 7, T.50N., R.5E., B.M.; T-5: NE¼NW¼ of Section 4, T.50N., R.5W., B.M.; T-6: SE¼SW¼ of ①

b. UTMG (Zone 11) T-1A: D: 499000mE/5283100mN A: 499300mE/5283250mN B: 499350mE/5283100 C: 499100mE/5282300mN ②

METHOD/TECHNIQUE OF RECONNAISSANCE [spacing of people, time spent, estimate of percent of coverage]

A pedestrian, systematic, partial survey of the three land parcels was designed to examine the majority of the exposed soils at the sites. In parcels T-1A and T-5, this consisted of concentrated examination of furrows and embankments (the majority of the areas being completely covered with grass crops), and provided less than 5% coverage of the parcels. In parcel T-6, about 15% of the total area was examined by making east-west and north-south transects of the area at intervals of approximately 10 meters. A total of two person days ③

ESTIMATED AREA: ______ m² or ______ hectares (______ acres) ④

SITE OWNER/TENANT, ADDRESS, PHONE Not Known

MODERN DISTURBANCE [kind, intensity] Parcels T-1A, T-5, and a good portion of T-6 are currently under cultivation

Attach a copy of the appropriate USGS topographic quad sheet to this form, with study locality boundaries clearly indicated. Either on the topo map or on a separate sketch map (whichever scale is largest) delineate those areas over which surveyors actually walked and looked intensively. Include scale, north arrow, legend for all information on any sketch maps, and note special features useful as landmarks or relevant to assessment of cultural resource potential in the area.

[CULTURAL RESOURCE RECONNAISSANCE RECORD] Page 2

PROJECT Post Falls, Idaho, wastewater treatment sites

GENERAL BIOTIC SETTING Douglas fir - Ponderosa pine forest zone (Daubenmire 1952)

ON-SITE VEGETATION, DENSITY cultivated grass crops over most of the area

SURROUNDING VEGETATION [indicate area of reference] grass and forbs overstoried by Douglas fir - Ponderosa pine forest

LOCAL FAUNA white-tailed deer, marmots, ground squirrels

SITE SOIL, PARENT MATERIAL (5 % visible) thin, dark brown humic soils developing over sand and gravels of glacial-flood origin

SITE/SETTING GEOMORPHOLOGY [inc. slope, relief] areas located in the wide U-shaped Spokane River Valley

SITE/SETTING GEOLOGY [surficial & bedrock] the Spokane River Valley is formed in the fault zone of the Purcell Trench. Basalt flows are overlaid by glacial flood gravel deposits

AVAILABLE WATER, Distance ______ m; Nature Spokane River

DIFFICULTY OF ACCESS [by foot] excellent access provided by numerous roads

RELEVANT LITERATURE, INFORMANTS Miller 1953, 1959 10-KA-44 site form

ESTIMATED ARCHAEOLOGICAL POTENTIAL [with reasons] potential for aboriginal cultural materials considered to be fairly low due to nearness of much more choice occupation sites along the Spokane River

MANAGEMENT RECOMMENDATIONS since no cultural properties were encountered, the proposed earth-disturbing activities are considered culturally non-destructive. However, if any cultural materials are encountered during the course of those activities, a qualified archaeologist should be requested to examine the site.

PHOTOS [No., registration nos., general topics]

B/W

Slides none taken

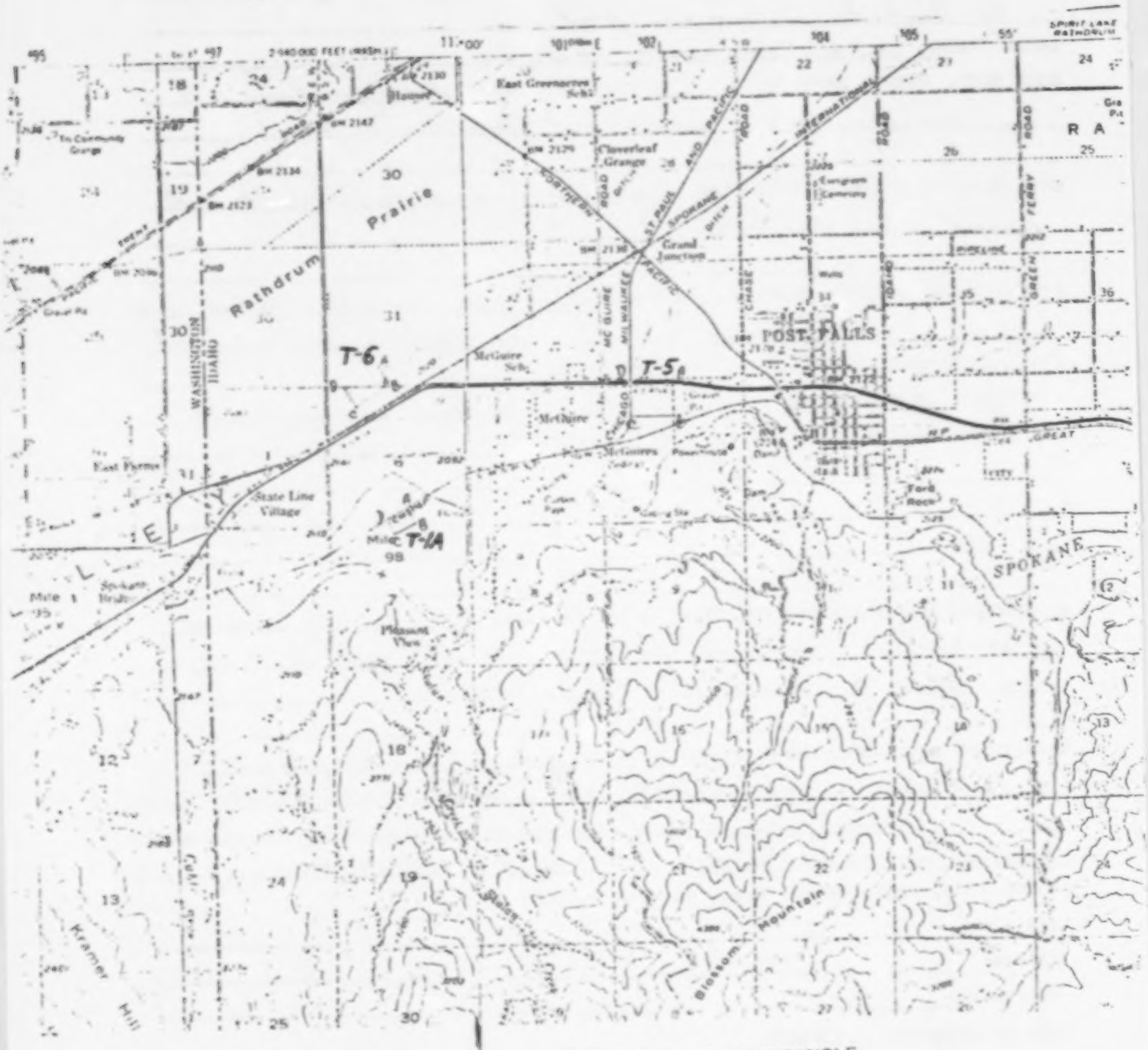
Polaroids

LIST OF APPENDED DOCUMENTS:

Map(s) 1 map indicating site localities and 1 map indicating areas given actual coverage

Other 1 continuation sheet

POST FALLS WASTEWATER TREATMENT
FACILITIES ARCHAEOLOGICAL SURVEY
6 AUGUST 1980 T.50N, T.51N, R.5W.

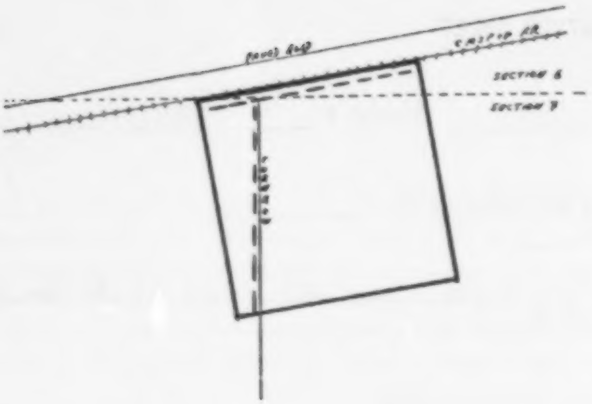


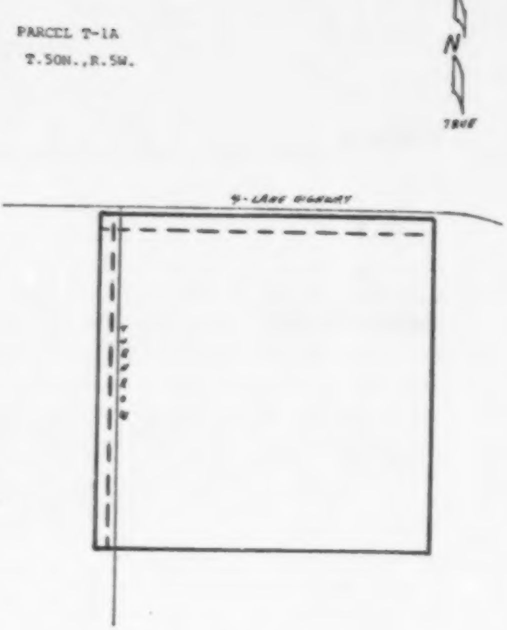
GREENACRES QUADRANGLE
WASHINGTON-IDAHO 1944
15 MINUTE SERIES (TOPOGRAPHIC)

COEUR D'ALENE QUADRANGLE
IDAHO-KOOTENAI CO 1957
15 MINUTE SERIES (TOPOGRAPHIC)

Reproduced from best available copy.

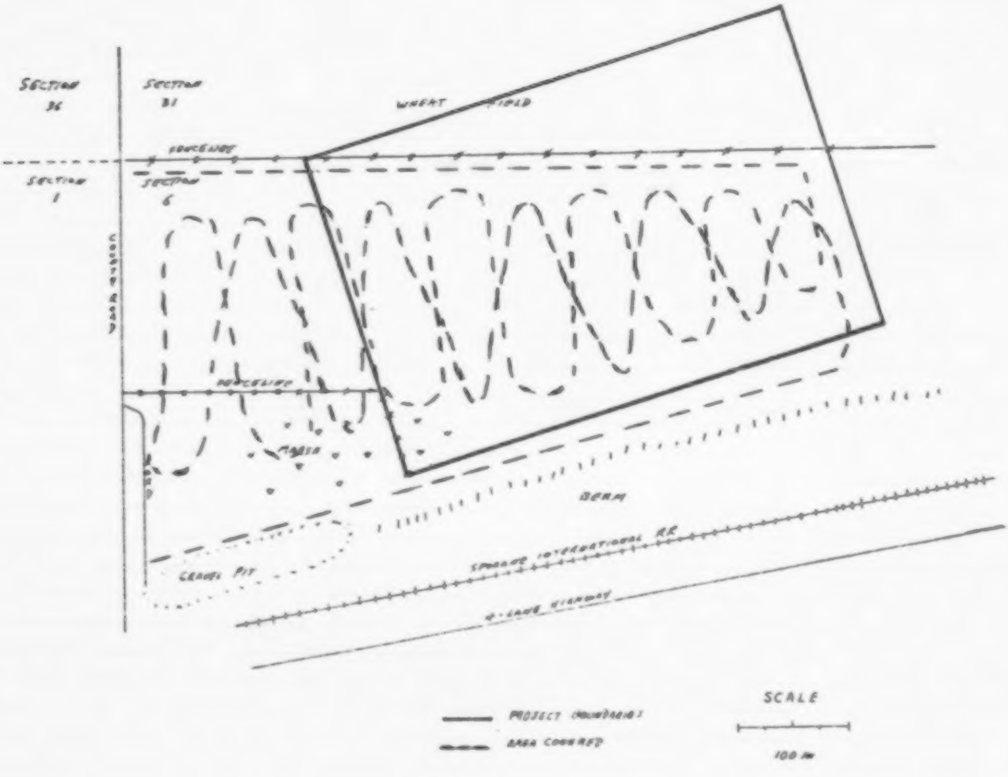
PARCEL T-1A
T.50N.,R.5W.





PARCEL T-5
T.50N.,R.5W.

PARCEL T-6
T.51N.,T.50N.,R.5W.



CONTINUATION SHEET

Field #: N/A State #: N/A

Item # CONTINUED DATA

①
Legal Description Section 31, T.51N., R.5W., and N½ NW¼ of Section 6, T.50N., R.5W., B.M.

②
U.T.M.G.

T-5: C: 501900mE/5284250N
D: 501900mE/5284500N
B: 502400mE/5284250N
A: 502400mE/528500N

T-6: B: 498600mE/5284550mN
A: 498800mE/5284700mN
D: 499000mE/5284550mN
C: 498700mE/5284300mN

③
Method/Technique were expended in the field for this project.

④
Estimated area

	m²	hectares	areas
Parcel T-1A	80,940	8.1	20
Parcel T-5	161,880	16.2	40
Parcel T-6	242,820	24.3	60
TOTAL	485,640	48.6	120

RECORDER(S) Daniel M. Mattson / Michael A. Pfeiffer DATE: 26 AUGUST 1980

IDAHO STATE HISTORICAL SOCIETY
610 NORTH JULIA DAVIS DRIVE BOISE, 83706
STATE MUSEUM

November 26, 1980

Ms. Norma Young
EPA Region 10
1200 6th Avenue
Seattle, WA 98101

Dear Ms. Young:

We have reviewed the cultural resource reports on the Post Falls wastewater treatment facilities prepared by the Laboratory of Anthropology, University of Idaho. These are excellent reports and we concur with the recommendations included. No archaeological or historic sites were located. Only one site, 10-KA-44, a rock art site, is in the vicinity of the project (area T-4). Care should be taken to insure that this site is not effected by the project. The project will have no effect on significant archaeological or historic properties.

Sincerely,

Thomas J. Green Prb

Thomas J. Green
State Archaeologist
State Historic Preservation Office

cc: Ruthann Knudson
Dr. Charles Hazel

Appendix B

WATER QUALITY STANDARDS, GUIDELINES AND REGULATIONS

Preceding page blank

NATIONAL PRIMARY DRINKING WATER STANDARDS

Type of Contaminant	Name of Contaminant	Type of Water System	Maximum Contaminant Level
Inorganic Chemicals	Arsenic	Community	0.05 mg/l
	Barium		1.
	Cadmium		0.010
	Chromium		0.05
	Lead		0.05
	Mercury		0.002
	Selenium		0.01
	Silver		0.05
	Fluoride		
	33.7°F & below		2.4
	53.8 - 58.3		2.2
	58.4 - 63.8		2.0
	63.9 - 70.6		1.8
	70.7 - 79.2		1.6
	79.3 - 90.5	Community	1.4
	Nitrate (as N)	Community & Noncommunity	10.
Organic Chemicals	Endrin	Community	0.002 mg/l
	Lindane		0.004
	Methoxychlor		0.1
	Toxaphene		0.005
	2, 4-D		0.1
	2, 4, 5-TP Silvex	Community	0.01

Total trihalomethanes [the sum of the 0.10 mg/l concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform)] 1, 2

Type of Contaminant	Name of Contaminant	Type of Water System	Maximum Contaminant Level
Turbidity	Turbidity at representative entry point to distribution system.	Community & Noncommunity	1 TU monthly average and 5 TU average of two consecutive days (5 TU monthly average may apply at state option)

1. Proposed MCL (Maximum contaminant level)
2. The maximum contaminant level for total trihalomethanes applies only to community water systems which serve a population of greater than 75,000 individuals and which add a disinfectant to the water in any part of the drinking water treatment process.

Preceding page blank

Type of Contaminant	Name of Contaminant	Type of Water System	Maximum Contaminant Level
Microbiological	Coliform Bacteria	Community & Noncommunity	Membrane Filter* Coliforms shall not exceed: 1 per 100 ml, mean of all samples per month 4 per 100 ml in more than one sample if less than 20 samples collected per month, or 4 per 100 ml in more than 5% of samples if 20 or more samples examined per month. Fermentation Tube - 10 ml portion* Coliforms shall not be present in more than 10% of portions per month, Not more than 1 sample may have 3 or more portions positive when less than 20 samples are examined per month, or Not more than 5% of samples may have 3 or more portions positive when 20 or more sample are examined per month. Fermentation Tube - 100 m portion* Coliforms shall not be present in more than 60% of the portions per month, Not more than 1 sample may have all 5 portion positive when less than 5 samples are examined per month, or Not more than 20% of samples may have all 5 portions positive when 5 or more samples are examined per month.

* If sampling rate is less than 4 per month, compliance shall be based on 3 month period unless state determines that a 1 month period shall apply.

Type of Contaminant	Name of Contaminant	Type of Water System	Maximum Contaminant Level
Microbiological	Optional Chlorine Residual	Community & Noncommunity	Minimum free chlorine residual throughout distribution system 0.2 mg/l. (At state option and based on sanitary survey, chlorine residual monitoring may be substituted for not more than 75% of microbiological samples.)
Radionuclides		Community	
Natural	Gross Alpha Activity		15 pCi/l
	Radium 226 + Radium 228		5 pCi/l Screening level: 1. Test for Gross Alpha 2. If Gross Alpha exceeds 5 pCi/l, test for Radium 226. 3. If Radium 226 exceeds 3 pCi/l, test for Radium 228.
Man-made	Beta particle and photon radioactivity	Community	4 millirem/year for total body or any internal organ Screening level: Gross Beta Activity 50 pCi/l Tritium 20,000 pCi/l Strontium 90 8 pCi/l If Gross Beta exceeds 50 pCi/l, sample must be analyzed to determine major radioactive constitutes present; and the appropriate organ and total bod, doses shall be calculated to determine compliance with the 4 millirem/year level.

PRIORITY POLLUTANTS LISTED IN THE CLEAN WATER ACT

Metals (And Metallic Compounds)
Antimony and compounds
Arsenic and compounds
Beryllium and compounds
Cadmium and compounds
Chromium and compounds
Copper and compounds
Lead and compounds
Mercury and compounds
Nickel and compounds
Selenium and compounds
Silver and compounds
Thallium and compounds
Zinc and compounds
Aromatic Hydrocarbons
Acenapthene
Benzene
Ethylbenzene
Fluoranthene
Napthalene
Toluene
Other aromatic hydrocarbons
Chlorinated Hydrocarbons
Chlorinated naphthalenes
Dichlorobenzenes
Other chlorinated benzenes
Dichloroethylenes
Chlorinated ethanes
Dichloropropane and dichloropropenes
Hexachlorobutadiene
Hexachlorocyclopentadiene
Polychlorinated biphenyls
Tetrachloroethylene
Trichloroethylene
Vinyl chloride

Halomethanes
Carbon tetrachloride
Chloroform
Other halomethanes
Phenols
2—chlorophenol
2, 4—dichlorophenol
Pentachlorophenol
Other chlorinated phenols
2,4—dimethylphenol
Nitrophenols
Phenol
Other phenols
Pesticides
Aldrin/Dieldrin
Chlordane and metabolites
DDT and metabolites
Endosulfan and metabolites
Endrin and metabolites
Heptachlor and metabolites
Hexachlorocyclohexane
Toxaphene
Other pesticides
Others
Acrolein
Acrylonitrile
Asbestos
Benzidine
Chloralkyl ethers
Cyanides
Dichlorobenzidine
Dinitrotoluene
Diphenylhydrazine
Haloethers
Isophorone
Nitrobenzenes
Nitrosamines
Phthalate esters
2,3,7,8—tetrachlorodibenzo-p-dioxin (TCDD)

---

5 of 5

UC-Coop. Extension
1/15/75

GUIDELINES FOR INTERPRETATION OF QUALITY OF WATER FOR IRRIGATION

Interpretations are based on possible effects of constituents on crops and/or soils. Guidelines are flexible and should be modified when warranted by local experience or special conditions of crop, soil, and method of irrigation.

PROBLEM AND RELATED CONSTITUENT	WATER QUALITY GUIDELINES		
	No Problem	Increasing Problems	Severe Problems
Salinity[1]			
EC_w of irrigation water, in millimhos/cm	<0.75	0.75 - 3.0	>3.0
Permeability			
EC_w of irrigation water, in mmho/cm	>0.5	<0.5	<0.2
adj.SAR[2]	<6.0	6.0 - 9.0	>9.0
Specific Ion Toxicity[3]			
from ROOT absorption			
Sodium (evaluate by adj.SAR)	<3	3.0 - 9.0	>9.0
Chloride (me/l)	<4	4.0 - 10	>10
(mg/l or ppm)	<142	142 - 355	>355
Boron (mg/l or ppm)	<0.5	0.5 - 2.0	2.0 - 10.0
from FOLIAR absorption[4] (sprinklers)			
Sodium (me/l)	<3.0	>3.0	----
(mg/l or ppm)	<69	>69	----
Chloride (me/l)	<3.0	>3.0	----
(mg/l or ppm)	<106	>106	----
Miscellaneous[5]			
NH_4-N, NO_3-N (mg/l or ppm) for sensitive crops	<5	5 - 30	>30
HCO_3 (me/l) [only with overhead sprinklers]	<1.5	1.5 - 8.5	>8.5
(mg/l or ppm)	<90	90 - 520	>520
pH	normal range = 6.5 - 8.4		-----

---

[1] Assumes water for crop plus needed water for leaching requirement (LR) will be applied. Crops vary in tolerance to salinity. Refer to tables for crop tolerance and LR. (mmho/cm × 640 = approximate total dissolved solids (TDS) in mg/l or ppm; mmho × 1000 = micromhos.)

[2] adj.SAR (Adjusted Sodium Adsorption Ratio) is calculated from a modified equation developed by U.S. Salinity Laboratory to include added effects of precipitation or dissolution of calcium in soils and related to $CO_3 + HCO_3$ concentrations.

To evaluate sodium (permeability) hazard: $\text{adj.SAR} = \frac{Na}{\sqrt{\frac{Ca + Mg}{2}}}\left[1 + (8.4 - pHc)\right]$

pHc is a calculated value based on total cations, Ca+Mg, and CO_3+HCO_3. Calculating and reporting will be done by reporting laboratory. NOTE: Na, Ca+Mg, CO_3+HCO_3 should be in me/l.

Permeability problems, related to low EC or high adj.SAR of water, can be reduced if necessary by adding gypsum. Usual application rate per acre foot of applied water is from 200 to about 1000 lbs. (234 lbs. of 100% gypsum added to 1 acre foot of water will supply 1 me/l of calcium and raise the ECw about 0.2 mmho). In many cases a soil application may be needed.

[3] Most tree crops and woody ornamentals are sensitive to sodium and chloride (use values shown). Most annual crops are not sensitive (use salinity tolerance tables). For boron sensitivity, refer to boron tolerance tables.

[4] Leaf areas wet by sprinklers (rotating heads) may show a leaf burn due to sodium or chloride absorption under low-humidity, high-evaporation conditions. (Evaporation increases ion concentration in water films on leaves between rotations of sprinkler heads.)

[5] Excess N may affect production or quality of certain crops, e.g. sugar beets, citrus, avocados, apricots, grapes etc.
(1 mg/l NO_3-N = 2.72 lbs. N/acre foot of applied water).
HCO_3 with overhead sprinkler irrigation may cause a white carbonate deposit to form on fruit and leaves.

Symbol	Name
EC_w	Electrical Conductivity of water
mmho/cm	millimho per centimeter
<	less than
>	more than
mg/l	milligrams per liter
ppm	parts per million
LR	Leaching Requirement
me/l	milliequivalents per liter
TDS	Total Dissolved Solids

Symbol	Name	Equiv. Wt.
Na	Sodium	23.00
Ca	Calcium	20.04
Mg	Magnesium	12.16
CO_3	Carbonate	30.00
HCO_3	Bicarbonate	61.00
NO_3-N	Nitrate-nitrogen	14.00
Cl	Chloride	35.45

17.1 ppm = 1 grain per gallon

Reproduced from
best available copy.

Appendix C

COORDINATION RECORD

EIS DISTRIBUTION LIST

LIST OF POST FALLS EIS SCOPING MEETING ATTENDEES

PETITION FROM POST FALLS AREA RESIDENTS REGARDING LOCATION OF PROPOSED TREATMENT PLANT

Preceding page blank

POST FALLS, IDAHO EIS DISTRIBUTION LIST

Federal Agencies

- Advisory Council on Historic Preservation
- U.S. Department of Agriculture
  - Farmers Home Administration
- U.S. Department of Commerce
  - National Marine Fisheries Service
- U.S. Department of Defense
  - Corps of Engineers, Seattle District
- U.S. Department of Health, Education & Welfare
- U.S. Department of Interior
  - Fish and Wildlife Service
- U.S. Department of Transportation
  - Federal Highway Administration

State Agencies

Idaho Air Quality Bureau
Idaho Division of Environment
Idaho Fish & Game Department
Idaho Transportation Department
Panhandle Area Council
Panhandle Health District
State Clearinghouse

State and Local Officials

Office of the Governor
Frank Henderson, Mayor of Post Falls
City Administrator, Post Falls
John Carpita, Kootenai County Engineer
Kootenai County Commissioners
Art Manley, State Senator
Gary J. Ingram, State Representative
L. C. Spurgeon, State Representative

Organizations

Idaho Wildlife Society
Kootenai Environmental Alliance
League of Women Voters of Idaho
Idaho Historical Society

Local Distribution

Mr. & Mrs. R. C. Allen
Mr. Rick Barton
Mr. & Mrs. Leland Bertz
Mr. Roy Bodine
Brown & Caldwell, Seattle, Washington
Mr. Edward Brugeer
Mr. & Mrs. Francis Czapla
Mr. Lee Dean
Mr. Jake Dodge
Mr. & Mrs. Paddy B. Doyle
Mr. Al Farver
Foster & Marshall, Spokane, Washington
Mr. Steve Frazey
Mr. Phil Frye
Mr. Marvin Goecke
Mr. William Goude
Mr. & Mrs. Jerry Halloran
Mr. Tom Hanson
Mr. Jack Hatch, Spokane, Washington
Mr. Kent Helmer
Mr. Dennis Hiatt
Mr. & Mrs. Dale W. Hickman
Ms. Joyce Huson
Idaho Vener Company
Jacklin Seed Company
Mr. Jim Judd
Ms. Hilde Kellogg
Ms. Ruth Ann Knudson, Moscow, Idaho
Mr. Les Land
Mr. Clay Larkin
LePard & Frame
Mr. & Mrs. C. S. Lilyquist
Louisiana-Pacific
Ms. Rita Lusk
Mr. Larry Maine
Meckel Engineering & Surveying
Mr. & Mrs. Ron Montague
Mr. Fred Moore
Mr. & Mrs. C. L. Nead
Mr. & Mrs. David Osborn
Mr. Del Ottinger
Mr. Dan Paulson
Post Falls Public Library
Potlatch Corporation
Mr. & Mrs. D. B. Rumelhart
Mr. Manuel Schneidmiller
Mr. Jack R. Smith
Ms. Elizabeth Sowder
Spokane Chronicle, Spokane, WA
Mr. Pat Tebo
Mr. Francis L. Thompson
Ms. Ellen Tinder
Mr. Jim Todd
Mr. & Mrs. W. P. Watson
Mr. Lonnie Wharf
Mr. & Mrs. James Willard
Spokesman-Review, Coeur d'Alene, ID

Preceding page blank

POST FALLS EIS SCOPING MEETING ATTENDEES
Coeur d'Alene, Idaho City Hall
June 5, 1979

Mayor Don Johnson
Coeur d'Alene, Idaho

James Le Pard
Le Pard & Frame, Inc.
Coeur d'Alene, Idaho

Jim Kimball
Le Pard & Frame, Inc.
Coeur d'Alene, Idaho

Gene McAdams, City Administrator
Coeur d'Alene, Idaho

Tom Wells, Public Works Director
Coeur d'Alene, Idaho

Frank Henderson, Chairman,
Steering Committee
Post Falls, Idaho

Jack C. Ross, Panhandle Health
District
Coeur d'Alene, Idaho

Warren McFall, EPA, Idaho
Operations Office
Boise, Idaho

Dr. Charles Hazel
Jones & Stokes Associates, Inc.
Sacramento, California

Mike Rushton
Jones & Stokes Associates, Inc.
Sacramento, California

Mayor Francis Wilhelm
Post Falls, Idaho

Jim Meckel
Meckel Engineering & Surveying
Coeur d'Alene, Idaho

Jim Fromm, Councilman
Coeur d'Alene, Idaho

Ray Koep
Coeur d'Alene, Idaho

Bill Stidham, Public Works
Department
Post Falls, Idaho

Larry Belmont, Panhandle
Health District
Coeur d'Alene, Idaho

Roger Tinkey
Idaho Health & Welfare Dept.
Coeur d'Alene, Idaho

Tony Harber
Brown & Caldwell Consulting
Engineers
Seattle, Washington

Norma Young, EPA, Region 10
Seattle, Washington

March 15, 1980

RECEIVED
MAR 21 1980
[illegible]
IDAHO OPERATIONS OFFICE

Dear Sirs:

The attached is a letter of position concerning placement of a sewage treatment plant. All persons contacted by myself were in agreement with my thinking. I did not contact all people in the concerned area - if it would be important for me to do so please let me know and I will. All persons who have signed are concerned and want to be advised of any meetings, hearings or findings that may come up on this matter. Please notify me of any developments and I will pass the word along. If you have any questions concerning the information contained in the letter attached address those inquiries to me. Thank you for your attention to this important matter.

Sincerely,

Jerry Halloran
W. 15951 Primrose Lane
Post Falls, Id. 83854

773-9214 (home)
667-9441 (work)

[illegible] OFFICE

SUBJECT: The proposed location of Post Falls' sewage treatment plant outside the city limits on Pleasantview Road in the Jacklin Seed tree farm area.

We, the citizens as signed hereto, are all residents of Kootenai County in the state of Idaho. We all live and/or own property in the area surrounding the tree farm on Pleasantview Road. We do recognize the need for Post Falls to obtain a central sewage system but we bitterly oppose any consideration of the Pleasantview Road site as a location for the treatment facility.

This area is presently zoned Suburban/Agriculture. In the past as agriculture moved out we saw residential areas come in. The area is now a prime residential area and the home for some fifty families. This area does not lend itself to any commercial zoning. Any expasion, construction or zone changes made in this area should be made only to attract more stick built - primary residences. To deviate from this path would have a negative impact on the property values of all of the exsisting homes. A sewage treatment plant in our back yard would discourage development by more residential constructio
Placement of the plant here would do nothing more than attract still more commercial enterprise, thus worsening the effect by turning the entire area into an industrial park. Besides dictating the future development of the area the mere presence of the plant and the "sewer stigma" would put downward pressures on the resale value of the currently exsisting homes.

Aside from the property use aspect there are other drawbacks to this location. The new truck traffic that would evolve would be a major problem. Pleasantview Road has a one lane railroad underpass which all traffic from both directions must use. This would create hazardous conditions for both driving and pedestrian use. Children in this area must walk down Pleasantview Road and through the underpass for the school bus. They walk this route during the winter months in the dark with no sidewalks. The added truck traffic would jeapordize their safety.

We do not wish to see Post Falls sprawl beyond it's city limits and go into the county with it's problems. This proposed site has been termed "the most convenient of several locations" by two of the people in this stage of planning. Let's hope that convenience does not oversadow intelligence. Placement of the treatment plant on Pleasantview Road would be detrimental to the betterment of the entire county. If placed there it would constitute a sharp reversal of the growth control that has taken place thus far in this part of Kootenai County. This plant needs to fit into the entire scheme of Kootenai County, now and in the county of the future. Pleasantview Road is NOT the place for the sewage treatment plant to be located.

Send letter to the attention of;

John Aguilar
City of Post Falls
408 Spokane
Post Falls, Id 83854

Mike Cooney
State of Idaho
Division of Environment
211 Ironwood Parkway
Coeur d'Alene, Id 83814

Art Manley (Senate)
Idaho State Legislature
State Capitol Building
Boise, Id 83720

Jim Kinball
Le Pard & Frame Inc.
603 N. 4th
Coeur d'Alene, Id 83814

Duane Jacklin
Jacklin Seed Company
17300 W. Jacklin Ave
Post Falls, Id 83854

Kootenai Count Commissioners
501 Government Way
Coeur d'Alene, Id 83814

Warren Mc Fall
Environmental Protection Agency
422 West Washington
Boise, Id 83702

Gary J. Ingram (House)
Idaho State Legislature
State Capitol Building
Boise, Id 83720

L.C. Spurgeon (House)
Idaho State Legislature
State Capitol Building
Boise, Id 83720

I have read the attached letter and find it to be in agreement with my thinking. By signing below I am urging all in the power of controlling the planning stage of the Post Falls sewer system to omit, as a possible site, the Jacklin Seed tree farm area.

Signature	Printed name and address
	Jerry Halloran 773-9214 W. 15951 Primrose Lane Post Falls, Id. 83854
Lois Halloran - Lois Halloran	W. 15951 Primrose Lane Post Falls, ID 83854 773-9214
Lonnie Wharf	W. 15975 Primrose Lane Post Falls ID 83854
? [illegible]	[illegible]
Holly Hickman H Hickman	N 3450 Pleas Ln.
Rita Annette Funk	N. 34[illegible] Pleasant Lane
Betty Rummelhart	N3470 Pleasant Lane
Don B. Rummelhart	Don B Rummelhart N3470 Pleasant Lane Post Falls, Ida 83854
Ginger L. Doyle	Ginger Doyle N. 3490 Pleasant Ln. Post Falls, ID 83854
Paddy B Doyle	N 349[illegible] Pleasant Lane
Francis Gyzla	N 3553 Pleasant Lane
Rita Gyzla	N 3530 Pleasant Lane
?	[illegible] PF.
Dale V. Hickman,	Dale D. Hickman N. 3450 Pleasant Lane Post Falls Idaho 83854

Reproduced from best available copy.

I have read the attached letter and find it to be in agreement with my thinking. By signing below I am urging all in the power of controlling the planning stage of the Post Falls sewer system to omit, as a possible site, the Jacklin Seed tree farm area.

Signature	Printed name and address
W. P. Watson	N 3440 PLEASANT LANE
Evelyn Watson	N 3440 Pleasant Lane
Marsha S. Nead	Marsha S. Nead N. 3441 Pleasant Lane
Curtis L. Nead	Curtis L. Nead N. 3441 Pleasant Lane
Ron Montague	RON MONTAGUE W. 16,000 PRIMROSE LANE
Cora Montague	CORA MONTAGUE W16000 Primrose Lane - Post Falls
Leland W. Bertz	W15976 Primrose Ln. - Post Falls
Laura L. Bertz	W. 15976 Primrose Ln Post F.
Sharon M Lilyquist	W15950 PRIMROSE LANE Post Falls
Craig S Lilyquist	W15950 PRIMROSE LANE Post Falls
Robert C. Allen	W. 15924 Primrose Ln. [illegible]
Jennie M. Allen	W. 15924 Prim Rose Post Falls
Neil L. Odom	W 15900 W Primrose Ln Post Falls
Paula W. Odom	15900 W Primrose Ln Post Falls

I have read the attached letter and find it to be in agreement with my thinking. By signing below I am urging all in the power of controlling the planning stage of the Post Falls sewer system to omit, as a possible site, the Jacklin Seed tree farm area.

Signature	Printed name and address
Eileen M Tinder	15925 Primrose lane
	N 5724 PLEASANT LANE

Reproduced from best available copy.

☆U.S. GOVERNMENT PRINTING OFFICE: 1981-797-168 117